SOV/49-58-10-11/15

The Pre-calculation of Zonal Circulation Characteristics of the Atmosphere

which effect the evolution of the macrocomponents. These characteristics will depend on

$$E = \frac{1}{2}(\overline{u'^2} + \overline{V'^2})$$

which has the idea of the averaged kinetic energy of the microcomponents per unit mass. Using Eqs.(1')-(3') and the definition of E, Eqs.(5) and (6) result (the second is the energy balance equation for the microcomponents). Several approximations are now made. First the right hand sides of Eqs.(5) and (6) are considered negligible. Second, the variables containing the pressure pulsations are ignored (c.f. Ref.2). Third, the field of the pulsations u' and V' is considered to be isotropic. Using these approximations (T), (5) and (6) can be rewritten in the

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The Pre-calculation of Zonal Circulation Characteristics of the Atmosphere

form (7). The pressure in the macrocomponent can be found from Eq.(8). Eq.(7) can be used for forecasting the state of the macrocomponent for a prolonged period. There are no figures and 2 references; 1 of the references is Soviet and 1 is English.

ASSOCIATION: Akademiya nauk SSSR, Institut fiziki atmosfery (Academy of Sciences, USSR, Institute of Atmospheric Physics)

SUBMITTED: January 9, 1958.

Card 4/4

SOV/ 49-58-11-9/18

AUTHORS: Monin, A. S. and Obukhov, A. M.

TITLE: **Small Amplitude Atmospheric Variations and Adaptation of Meteorological Fields** (Malyye kolebaniya atmosfery i adaptatsiya meteorologicheskikh poley)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1958, Nr 11, pp 1360-1373 (USSR)

ABSTRACT: The movements of the air masses can be classified as slow (synoptic) and fast (waves). The fast processes having a small amplitude possess a character of short waves. Therefore, in order to determine the static and geostrophic properties, a problem of short waves in the atmosphere should be solved. The fast movements originate when an equilibrium of static and geostrophic conditions are disturbed. The waves are produced which spread into the surrounding air masses causing them to adjust their meteorological fields. Therefore, in order to establish the general equilibrium of the air masses, these short waves of the fast motion should be determined (filtered off). In order to describe the short waves
$\Delta \frac{\partial \varphi}{\partial t} = -\ell \Delta \varphi$ is obtained. From the last three

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APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135110019-9"

equations of (5) the final expressions (9) are derived in the form most suitable for further analysis when (10) are included together with the condition (11). The equations (9) are applied in the solutions (12), therefore, the parameters of geostrophic wind (13) can be included. The solutions of (9) will be stable only if (14) to (16) are satisfied. If the initial parameters (10) are not related to (14), then the solutions (9) can be shown as a sum of the stable condition, i.e. function ϕ_g and the unstable condition given by (17). Therefore, this can be solved by means of the equation (19) and the matrix (20) when the equation (18) is introduced. The final solution can be shown as (21), (22) and (23). The invariant (23) represents the potential eddy (Refs 1 and 4) It should be noted that from the third and fifth equations of (9) the equation:

$$\frac{\partial}{\partial t}(p - c^2\rho) = -\beta\chi$$

is obtained which can be transformed into an invariant (24)

5(7) SOV/20-122-1-15/44

AUTHORS: Monin, A. S., Obukhov, A. M., Corresponding Member, ~~Academy of~~ Sciences, USSR

TITLE: The Main Types of the Motions of a Baroclinic Atmosphere in the Field of the Coriolis Power (Osnovnyye tipy dvizheniy baroklinnoy atmosfery v pole sily Koriolisa)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 1, pp 58-61 (USSR)

ABSTRACT: This paper gives a classification of the main types of the dynamic processes in the atmosphere (horizontal vortex motions, gravitation waves and acoustic waves) on the basis of the solution of the problem of the small vibrations of a baroclinic atmosphere for sufficiently general assumptions. In this way, the filtering activity of the quasistatic approximation may be explained. The authors first give the system of the equations for the dynamics of the atmosphere. The state of relative rest is chosen as the "main state" of the atmosphere. Some quantities for the characterization of the excited state of the atmosphere are then defined. Linearizing the equations of the atmosphere dynamics (i.e.

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by eliminating the square terms), a new system of equations is deduced. This system (like the initial system) is of the fifth order with respect to time, and it describes approximately the evolution of the perturbations. The boundary conditions for the coordinate z are then given. For the solution of the Cauchy (Koshi) problem, 5 initial conditions are necessary. The above-mentioned system of equations has a family of steady solutions which depends on one arbitrary function $\psi(x,y,z)$ of the coordinates. These steady-state solutions are horizontal and have no divergences; the formulae of the geostrophic wind and the equations of statics may be applied to them. The above-mentioned system of equations has an invariant - a function which may be linearly expressed by the initial characteristics of the field. The order of the system and the number of the independent characteristics of the field may be diminished by 2. The wave solutions are scattered "without leaving a trace". (If the characteristics of the wave field in the initial instant of time are different from zero within a certain finite region, they will approach zero

SOV/20-122-1-15/44

The Main Types of the Motions of a Baroclinic Atmosphere in the Field of the Coriolis Power

for $t \to \infty$). The initial field may be given as a sum of a steady component and of a wave component. The authors then assume that the initial characteristics of the field satisfy certain conditions (which are given in this paper) everywhere, with exception of a finite region. The various characteristics may be given independently. In the course of time, the disturbing wave is scattered and the characteristics of the field approach the steady-state type in any finite region. This is the adaption process of the fields in the atmosphere. For an isothermal atmosphere, the solution may be found as a superposition of the corresponding partial solutions of the corresponding differential equation. The waves of higher frequencies are called acoustic waves, the waves of lower frequencies - gravitation waves. The adaption of the atmosphere to the quasistatic state takes some minutes. There are 5 references, 4 of which are Soviet.

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MONIN, A. S.

"On the Similarity of Turbulence in the Presence of a Mean Vertical Temperature Gradient."

"Turbulence in Shear Flow with Stability,"

reports presented at the Intl. Symposium on Fluid Mechanics in the Ionosphere, Ithaca, New York, 9-15 Jul 59

Inst. of Physics of the Atmosphere, Moscow.

MONIN, A. S.

3(7)
AUTHOR: Popov, L. I. SOV/50-59-4-19/21

TITLE: International Congress of Geophysicists (Mezhdunarodnaya Assambleya geofizikov)

PERIODICAL: Meteorologiya i gidrologiya, 1959, Nr 4, pp 74-77 (USSR)

ABSTRACT: From July 1, 1957 to December 31, 1958, investigations of our planet were carried out by scienti-ts of 65 countries under the program of the International Geophysical Year (IGY). The 5th Congress of the Special Committee on the International Geophysical Year from July 29 to August 9, 1958 in Moscow was dedicated to the execution of these measures. A short survey of this Congress is given here.-The suggestion by A. A. Zolotukhin on a world-wide organization of evaluations of meteorological data of the IGY in form of synoptic daily world maps, maps of the southern and northern hemispheres, and of vertical sections of the atmosphere, was discussed. The Study Group of Meteorology carried out the following work: on numerical methods of weathor forecasts (conducted by I. A. Kibel', Corresponding Member of the AS USSR), on luminous night clouds (conducted by Professor V. V. Sharonov), on meteorology in the Antarctic (conducted by Professor B. L.

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International Congress of Geophysicists SOV/50-59-4-19/21

Dzerdzeyevskiy). A. D. Obukhov, Corresponding Member of the AS USSR, and A. S. Monin (Moscow) delivered a report on the theory of the adjustment of quasistatic and quasigeostrophic conditions in the atmosphere for a linear case, and put forward the results of a number of investigations in this direction. I. A. Kibel', Corresponding Member of the AS USSR, and V. P. Sadokov (Moscow), reported on the forecasts of temperature on the earth's surface with help of hydrodynamic methods, and for the first time put forward a scheme for the solution of the quasistatic-quasigeostrophic system of equations for the forecast in consideration of the turbulent heat conductivity. K. I. Duleyev and G. I. Marchuk (Moscow) put forward a new iteration method for the solution of finite difference equations typical for the tasks of the numerical short-termed forecast. Professor M. I. Yudin (Leningrad) suggested some alterations of the forecast equations, thus reducing the area of influence considered in the forecast. He pointed out the necessity of thoroughly testing the methods worked out by many investigators (N. Ye. Kochin and A. A. Dorodnitsyn) for the consideration of the influence of the non-adiabatic factors and of large mountain ranges. O. G. Krichak

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International Congress of Geophysicists SOV/50-59-4-19/21

(USSR) delivered a report on "The Characteristics of the Circulation in the Atmosphere Over the Antarctic and the Relationship of This Circulation With the Processes on the Southern Hemisphere".

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66303

3.9100 SOV/49-59-11-1/28

AUTHORS: Keylis-Borok, V. I., and Monin, A. S.

TITLE: Magneto-elastic Waves and the Boundary of Earth Core

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya, 1959, Nr 11, pp 1529-1541 (USSR)

ABSTRACT: The authors describe results of their investigations of the dispersion, damping, polarization and origin of magneto-elastic waves. The damping of waves with an increase of the field strength H_0 attains a certain maximum value from which it gradually tends to 0. Two types of waves can occur in a strong field: slow waves with a velocity between the transverse and longitudinal elastic waves, and fast waves with a velocity proportional to H_0. An intense mechanical vibration can only be caused by slow waves. The characteristics of the latter, being similar to longitudinal or transverse waves, depend on the direction of their propagation and are not affected by the initial pulse. The observed range of velocities of seismic waves in a stratum D" can be explained by a linear increase of the gradient k/ρ and by a decrease of u/ρ (see table) due to compensation by the magnetic field. The existence of transverse waves in the core can be explained by a presence of the magnetic field

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66103

SOV/49-59-11-1/28

Magneto-elastic Waves and the Boundary of Earth Core

unless there is a layer 20 to 80 km thick at its surface with an increased resistance (to ~ 0.4 x 10^{-8} sec) or there is a radial field with a strength ~ 10^9 to 10^{10} oersted. An increase of the phase velocity v of longitudinal and transverse (dashed lines) waves is illustrated in Fig 1, where the numbers on curves denote a squared strength of the field ϕ. Fig 2 shows the polarization of vibration in a weak field. Fig 3 illustrates the phase velocity of vibrations in a strong field. Fig 4 gives the coefficients of damping with distance in a weak field where the magnitudes of $e^{-K_\perp x\omega/a}$, $e^{-K_\parallel x\omega/a}$ determine damping with a distance x of longitudinal and transverse waves respectively. Thanks are conveyed to G. S. Golitsyn, V. A. Kalinin and R. Khayd for their assistance. There are 4 figures, 1 table and 12 references, 6 of which are Soviet and 6 English.

ASSOCIATION: Akademiya nauk SSSR, Institut fiziki Zemli (Academy of Sciences USSR, Institute of Physics of Earth)

SUBMITTED: March 26, 1959

Card 2/2

5(3)

AUTHOR: Monin, A. S. SOV/53-67-1-6/12

TITLE: Atmospheric Diffusion (Atmosfernaya diffuziya)

PERIODICAL: Uspekhi fizicheskikh nauk, 1959, Vol 67, Nr 1, pp 119-130 (USSR)

ABSTRACT: This article is an expanded version of a lecture delivered by the author in Oxford (England) in August 1958 at the International Symposium on atmospheric diffusion and air contamination. The author investigated all problems connected with the distribution and propagation of impurities of industrial origin as well as with radioactive particles. He first discusses the factors influencing atmospheric diffusion such as contamination sources, meteorological conditions, the nature and the properties of the impurities themselves, and interaction with the surface of the earth (or that of water). Further, the specific characteristic features of turbulent diffusion are dealt with, and also the analogy between diffusion in the field of microturbulence and molecular diffusion. Also a semiempirical equation describing turbulent diffusion is given; its solution is derived and discussed. The statistical treatment of turbulent diffusion is further discussed.

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SOV/53-67-1-6/12

Atmospheric Diffusion

Moreover, the author speaks about the influence exercised by thermal stratification of the air upon turbulent diffusion, which has been investigated recently by the author himself as well as by A. M. Obukhov (Refs 16-19) and several American research workers. A further chapter of the article deals with consideration of the finite velocity of turbulent diffusion. Finally, diffusion in the macroscopic turbulence field is discussed (A. M. Obukhov, A. N. Kolmogorov, Refs 30,31) and the expected development of the theory of turbulent diffusion is discussed. Apart from those already named, the following Soviet authors are mentioned: D. L. Laykhtman, V. A. Fok, G. Sholeykhovskiy, B. I. Davydov, Ye. S. Lyapin, and M. D. Millionshchikov. There are 38 references, 19 of which are Soviet.

Card 2/2

10 (6)

AUTHOR: Monin, A. S.

SOV/20-125-3-13/63

TITLE: On the Theory of Local-Isotropic Turbulence (K teorii lokal'no-izotropnoy turbulentnosti)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 3, pp 515-518 (USSR)

ABSTRACT: A. N. Kolmogorov (Refs 1, 2) introduced the notion of the local-isotropic turbulence, which was very important for the development of the theory of turbulent motions of a liquid and for the solution of some important practical problems. A dynamic equation introduced by A. N. Kolmogorov (Ref 2) is given explicitly. But this formula and some other formulae of the theory of the local-isotropic turbulence hitherto have not been deduced accurately. The author of the present paper discusses a manner of deducing the theory of local-isotropic turbulence, which permits a more accurate deduction of the known results, and also the deduction of new results. In the present paper, the author limits himself to the investigation of an incompressible liquid ($\partial u_\alpha/\partial x_\alpha = 0$, and therefore also $\partial v_\alpha/\partial r_\alpha = 0$). S denotes the fixed ("absolute") system of Cartesian coordinates x_i; $u_i = u_i(x, t)$ the velocity

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components of the motion of the liquid in the system S. The author then defines the notion of local-isotropic turbulence. These distributions do not depend on the special properties of the liquid particle A; further, they are invariant with respect to orthogonal transformations of the initial coordinates x_i and with respect to displacements along the time axis. In the present paper, the author investigates the values of v_i and $P - P_o$ only in a fixed instant of time. In this case, the above-mentioned distributions do not depend on time. First, the local-isotropic field of the velocities $u_i(x)$ and then the mutual structural function of velocity and pressure are investigated. The calculations are given step by step. Finally the equation

$$\left(\frac{d}{dr} + \frac{4}{r}\right)\left(D_{111} - 6\nu\frac{dD_{11}}{dr}\right) = -4\varepsilon$$

is found. By integrating this equation with respect to r (if the quantity $D_{111} - 6\nu\frac{dD_{11}}{dr}$ is regular at zero) the equation of A. N. Kolmogorov

(Ref 1) is found. ν denotes the viscosity coefficient, ε the rate of dissipation of the turbulent energy, ... B_{111} the longitudinal structural functions of the ... field of first and second order. The equation

$$\frac{\partial v_i}{\partial t} + v_\alpha \frac{\partial v_i}{\partial x_\alpha} = \frac{\partial p_o}{\partial x_{oi}} - \frac{\partial p}{\partial x_i} + \nu(\Delta + \Delta_o)(v_i - v_{oi})$$

is very convenient for the deduction of further ... equations which connect the structural functions of the local-isotropic turbulence. There are 8 references, ... of which are Soviet.

ASSOCIATION: Institut fiziki atmosfery Akademii nauk SSSR (Institute of the Physics of the Atmosphere of the Academy of Sciences USSR)

PRESENTED: December 24, 1958, by A. N. Kolmogorov, Academician

SUBMITTED: December 16, 1958

MONIN, A. S. (Moscow)

"On the Turbulent Motion in a Gravitational Field of Nonconstant Temperature."

report presented at the First All-Union Congress on Theoretical and Applied Mechanics, Moscow, 27 Jan - 3 Feb 1960.

MONIN, A.S.; OBUKHOV, A.M.

Principal types of motions of a baroclinic atmosphere in the field of the Coriolis force; abstract. Nek.probl.meteor. no.1:27 '60.

(Atmosphere) (MIRA 13:8)

S/049/60/000/01/024/027
E201/E191

AUTHORS: Kazanskiy, A.B., and Monin, A.S.

TITLE: Turbulence Above the Lowest Layer of the Atmosphere

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya, 1960, No 1, pp 165-168

TEXT: The authors discuss the stationary turbulence in the lower layers of the atmosphere, assuming uniformity along the horizontal direction. The problem was to find the distribution with height of the wind velocity components, temperature and some characteristics of turbulence, especially the turbulence (mixing) coefficient K. The analysis was based on the experimental material obtained by an American aerophysical expedition in 1953 reported in a book by Lettau and Davidson (Ref 3). In spite of the very careful organization of measurements during this expedition, individual results were not very reliable. Consequently the authors limit themselves to several typical cases (Figs 1-2). Among the results reported are the following conclusions: 1) Coriolis forces reduce the turbulence (mixing) coefficient, i.e. they tend to stabilize turbulence; and 2) under turbulent conditions the changes of the wind direction in the lowest hundred metres of the atmosphere amount

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Turbulence Above the Lowest Layer of the Atmosphere

to only several degrees.
There are 2 figures, 1 table and 6 references: 5 Soviet and 1 English.

ASSOCIATION: Akademiya nauk SSSR, Institut fiziki atmosfery (Institute of Physics of the Atmosphere, Academy of Sciences USSR)

SUBMITTED: May 8, 1959

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S/020/60/134/002/0 4/0 9
B104/B201

AUTHOR: Monin, A. S.

TITLE: Lagrangian characteristics of turbulence

PERIODICAL: Doklady Akademii nauk SSSR, v. 134, no. 2, 1960, 304-307

TEXT: In the introduction, the author explains why the functions Z, Ψ, U entering into equation

$$z[n] = \sum^{n} \Psi(n, m, u[m]), \quad (1) \qquad (1)$$

for the velocity of liquid particles in turbulent diffusion may be regarded as random functions: they are statistically stable. It is then stated that Taylor (Proc. Lond. Math. Soc., 20, 196 (1921)) was the first to introduce Lagrangian characteristics of small-scale turbulence into theory, thus obtaining formulas to express the dispersion of liquid particles by Lagrangian velocity correlation functions. As, however, in a number of cases atmospheric turbulence cannot be regarded as a small-scale turbulence, only local hydrodynamic characteristics may be regarded as statistically

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stable. The author introduces the inertial system S_1 which moves with the velocity $\vec{v}_0$. The coordinates of this system are $\vec{y} = \vec{x} - \vec{x}_0 - \vec{v}_0\tau$, $\tau = t - t_0$. These relative coordinates are, provided that $|\vec{y}_1|$ and τ be sufficiently small, the local Lagrangian characteristics of flow. In the study of probability distribution of the local characteristics it is assumed, in accordance with the theory of A. N. Kolmogorov (DAN, 30, no. 4 (1941)), that in the case of isotropic turbulence the distribution does not depend on t_0, $\vec{x}_0$, and $\vec{v}_0$, but only on $\vec{y}_1$, the dissipation rate of the turbulence energy, and the kinematic viscosity. Formulas

$$f(y, v, \tau | y_1) = \int \psi(y, v, \tau | y_1, v_1) \varphi(v_1 | y_1) dv_1, \quad (5)$$ (5) and

$$\psi(y, v, \tau | y_1, v_1) = \psi_0(y - y_1 - v_1\tau, v - v_1, \tau) \quad (6)$$ (6)

are given for the probability distribution and the probability density of these coordinates. (6) shows the invariance of the probability distribution with respect to Galilean transformations. Sometimes, it is better not to use the abovementioned reference system S_1, but a noninertial reference system S_2 which moves along with certain liquid particles. In this case, the local Lagrangian characteristics are the coordinates of the liquid particles in the system S_2. Here, these are the quantities $\vec{l}(\tau\, l_0) = \vec{x}(t_0 + \tau|\vec{x}_0 + \vec{l}_0, t_0) - \vec{x}(t_0 + \tau|\vec{x}_0, t_0)$, and also the velocities of liquid particles in S_2 with sufficiently small $|\vec{l}_0$ and τ. As a consequence of local isotropy, the probability density for $\delta\vec{l} = \vec{l}(\tau\, \vec{l}_0) - \vec{l}_0$ reads:

$$q(\delta\mathbf{l}, \tau\,|\,\mathbf{l}_0) = \lambda^{-3} Q\left(\frac{|\delta\mathbf{l}|}{\lambda}, \frac{\delta\mathbf{l}\cdot\mathbf{l}_0}{\lambda l_0}, \frac{l_0}{\lambda}, \frac{\tau}{\tau_\lambda}\right). \qquad (13)$$

For $l_0 \gg 1$, the dependence of (13) on ν is negligible, and this relation can be represented in the form

$$q(\delta\mathbf{l}, \tau\,|\,\mathbf{l}_0) = (\varepsilon\tau^3)^{-3/2} Q_0\left(\frac{|\delta\mathbf{l}|^2}{\varepsilon\tau^3}, \frac{\delta\mathbf{l}\cdot\mathbf{l}_0}{\varepsilon^{1/2}\tau^{3/2} l_0}, \frac{l_0^2}{\varepsilon\tau^3}\right). \qquad (14)$$

In the last section, the author gives a differential equation

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$$\frac{\partial s}{\partial t} + \frac{\partial u_\alpha s}{\partial x_\alpha} = 0, \qquad (16)$$

that describes the impurity transfer by moved particles in an incompressible liquid. Using a fixed initial distribution, he obtains integral

$$\overline{s(x, t)} = \int \rho(x, t \mid x_0, t_0) s_0(x_0) dx_0, \qquad (17)$$

for the volume concentration. This integral forms the basis of the theory of turbulent diffusion. Formula

$$\overline{s(y, \tau)} = \int \rho(y_1 \tau \mid y_1) s_0(y_1) dy_1, \qquad (18)$$

corresponding to (17) is derived for the relative diffusion in the reference system S_1. A similar formula holds for S_2. A. M. Obukhov is mentioned. There are 5 references: 2 Soviet-bloc and 3 non-Soviet-bloc.

ASSOCIATION: Institut fiziki atmosfery Akademii nauk SSSR (Institute of Physics of the Atmosphere, Academy of Sciences USSR)

PRESENTED: April 7, 1960, by A. N. Kolmogorov, Academician

SUBMITTED: April 7, 1960

MONIN, Andrey S.

Empirical data on turbulence in the surface layer of the atmosphere.

report submitted for the Intl. Symposium on Fundamental Problems in Turbulence and their relation to geophysics, IUGG and IUTAM, Marseilles, France, 4-9 Sept 1961.

MONIN, A.S.

Pressure variations in a compressible atmosphere. Izv. AN SSSR. Ser. geofiz. no.4:602-612 Ap '61. (MIRA 14:3)
(Atmospheric pressure)
(Weather forecasting)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135110019-9"

KAZANSKIY, A.B.; MONIN, A.S.

Dynamic interaction of the atmosphere and the earth's surface. Izv.AN SSSR.Ser.geofiz. no.5:786-788 My '61. (MIRA 14:4)

1. Akademiya nauk SSSR, Institut fiziki atmosfery.
(Atmospheric turbulence) (Friction)

...II, A.S.

Some characteristics of sound scattering in a turbulent atmosphere. Akust. zhur. 7 no.4:457-461 '61. (MIRA 14:10)

1. Institut fiziki atmosfery AN SSSR, Moskva.
(Atmospheric turbulence)
(Sound)

MONIN, A.S.

Turbulence spectrum in a thermally inhomogeneous atmosphere. Izv. AN SSSR. Ser. geofiz. no.3:397-407 Mr '62. (MIRA 15:2)

1. AN SSSR, Institut fiziki atmosfery.
(Atmospheric turbulence)

MONIN, A.S.

Use of unreliable forecasts. Izv.AN SSSR.Ser.geofiz. no.2:218-228 F '62. (MIRA 15:2)

1. Institut fiziki atmosfery AN SSSR.
(Weather forecasting)

BASHARINOV, A.Ye.; FLEYSHMAN, B.S.; KONIN, A.S., doktor fiz.mat. nauk, retsenzent; ZUBAKOV, V.D., kand. tekhn. nauk, retsenzent; IVANUSHKO, N.D., red.; SVESHNIKOV, A.A., tekhn. red.

[Methods of statistical sequential analysis and their application in radio engineering] Metody statisticheskogo posledovatel'nogo analiza i ikh radiotekhnicheskie prilozheniia. Moskva, Izd-vo "Sovetskoe radio," 1962. 352 p. (MIRA 15:6)
(Mathematical statistics) (Radio engineering)

S/506/62/000/004/001/005
E032/E314

AUTHOR: Monin, A.S.

TITLE: On the structure of the wind velocity and temperature fields in the near-ground layer of air

SOURCE: Akademiya nauk SSSR. Institut fiziki atmosfery. Trudy. no. 4. 1962. Atmosfernaya turbulentnost'. 5 - 20

TEXT: This is a review paper concerned with existing theoretical and empirical data on the structure of these fields. Particular attention is paid to those quantities which can be measured directly. The subject matter is considered under the following headings: 1) definition of the near-ground layer; 2) possible measurements; 3) stability of average values; 4) structural characteristics; 5) frozen-in turbulence; 6) turbulence spectrum; 7) similarity theory for atmospheric turbulence; 8) similarity theory for the near-ground layer of air; 9) similarity of mean profiles; 10) determination of the "external parameters" v and q of the similarity theory for the near-ground layer; 11) similarity of pulsations; 12) similarity of time spectra; 13) similarity theory for the inertial spectrum interval and 14) structural and spectral functions in the

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E032/E314

On the structure of ....

inertial interval. The near-ground layer is defined as extending to a height of a few tens of metres above the Earth surface in which the Coriolis force can be neglected and the following conditions are satisfied: a) the local terrain is plane and the underlying surface is sufficiently homogeneous so that the wind velocity and temperature fields are statistically uniform in the horizontal direction and b) there are no sudden changes in weather so that the wind velocity and temperature fields are statistically time-independent within time intervals in which the natural diurnal variation in the weather is not very noticeable. The statistical characteristics of meteorological fields are then independent of horizontal coordinates of time and are functions of the height z only. Most of the information reviewed is theoretical but no specific references are quoted.

Card 2/2

MONIN, A.S. (Moskva); YAGLOM, A.M. (Moskva)

Hydrodynamic instability and the appearance of turbulence; review. PMTF no.5:3-38 S-O '62. (MIRA 16:1)
(Hydrodynamics) (Turbulence)

MONIN, A.S.

Use of statistical methods in weather forecasting. Meteor. i gidrol. no.7:3-10 Jl '62. (MIRA 15:6)
(Statistical weather forecasting)

35042

S/040/62/026/002/014/025
D299/D301

24.4300

AUTHOR: Monin, A.S. (Moscow)

TITLE: On the Lagrangian equations in incompressible viscous fluid hydrodynamics

PERIODICAL: Prikladnaya matematika i mekhanika, v. 26, no. 2, 1962, 320 - 327

TEXT: The Lagrangian equations for an incompressible fluid are derived in a form which is free of the shortcomings of W.J. Pierson's formulation (see references); Pierson's method leads to a disturbance of the continuity conditions. The Lagrangian formulation is particularly suitable for the statistical description of turbulent motions. After transformations, one obtains the complete system of equations in Lagrangian variables:

$$[\xi^1, \xi^2, \xi^3] = 1 \qquad (1.5)$$

and

$$\frac{\partial^2 \xi^i}{\partial t^2} = -[\xi^j, \xi^k, P] + \nu([\xi^2, \xi^3, [\xi^2, \xi^3, \partial\xi^i/\partial t]] + [\xi^3, \xi^1, [\xi^3, \xi^1, \partial\xi^i/\partial t]] + [\xi^1, \xi^2, [\xi^1, \xi^2, \partial\xi^i/\partial t]]) \qquad (1.8)$$

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S/040/62/026/002/014/025
D299/D301

On the Lagrangian equations in ...

The Lagrangian form of equations is compared with the Navier-Stokes equations; thus, the viscous forces are described (in the Lagrangian equations) by nonlinear terms of the 5-th order in ξ^i, whereas in the Navier-Stokes equations the inertial forces are described by second order terms (in u_i). Some particular cases are considered, in which the Lagrangian equations are simplified, (plane flow and plane-parallel flow). For the complete statistical description of turbulence, E. Hopf's method is used (Ref. 9: Statistical hydromechanics and functional calculus, J. Rat. Mech. Anal., 1952, 1, 87). This method has the advantage of reducing the problem to the solution of linear equations. Further, the Lagrangian equations are derived in covariant form. Thereby, the unknown functions are the contravariant velocity components:

$$v^i = \frac{\partial \xi^\alpha}{\partial t} \frac{\partial x^i}{\partial \xi^\tau}, \qquad \frac{\partial \xi^i}{\partial t} = v^\alpha \frac{\partial \xi^i}{\partial x^\alpha}. \qquad (3.1)$$

The continuity equation and the equations of motion are

$$\frac{\partial v^\beta}{\partial x^\beta} = 0 \qquad (3.4)$$

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and
$$\frac{\partial v^i}{\partial t} + v^\alpha \nabla_\alpha v^i = - g^{i\alpha} \frac{\partial P}{\partial x^\alpha} + \nu g^{\alpha\beta} \nabla_\alpha \nabla_\beta v^i \quad (3.5)$$

where the last term contains the velocity Laplacian. Eqs. (3.4) and (3.5) are used to describe small fluctuations of the fluid about its state of rest. The quantities v^i are considered small, and Eqs. (3.5) are linearized, yielding
$$\frac{\partial v^i}{\partial t} = - \frac{\partial P}{\partial x^i} + \nu \Delta v^i. \quad (3.6)$$

The advantage of the above method of linearization (as compared to Pierson's method), consists in the fact that it does not become necessary to linearize Eq. (3.1), when using Eqs. (3.4) and (3.6); hence the continuity equation remains exact. There are 9 references: 3 Soviet-bloc and 6 non-Soviet-bloc. The 4 most recent references to the English-language publications read as follows: G.K. Batchelor. Small-scale variation of convected quantities like temperature in turbulent fluid. Part I., J. of Fluid Mech. 1959, no. 5, p. 1, 113; G.K. Batchelor, I.D. Hiwells, A.A. Townsend, Small-scale varia-

S/040/62/026/002/014/025
D299/D301

tion of convected quantities like temperature in turbulent fluid, Part II., J. of Fluid Mech., 1959, v. 5, p. 1, 134; G.K. Batchelor, The effect of homogeneous turbulence on material lines and surfaces Proc. Roy. Soc. A., 1952, 213, 349; W.J. Pierson, On the transformation of the Navier-Stokes equations into Lagrangian form with selected linear solutions, Rep. at the Intern. Symposium on turbulence, JUGG and IYTAM, 1961, Sept. Marseille.

ASSOCIATION: Institut fiziki atmosfery AN SSSR (Institute of Physics of the Atmosphere of the AS USSR)

SUBMITTED: December 22, 1961

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135110019-9"

MONIN, A. S., and TSVANG, L. R.,

"On structure of turbulence in the low troposphere"

Report to be submitted for the 13th General Assembly, Intl. Union of Geodesy and Geophysics (IUGG), Berkeley Calif., 19-31 Aug 63

MONIN, A. S.

"Long-term and Short-term weather forecasts."

report presented at the 5th Conference on Atmospheric Optics and Actinometry, Moscow, 24-29 June 1963.

MONIN, A.S.

Physical mechanism of the long-range weather changes. Meteor.i gidrol. no.8:43-46 Ag '63. (MIRA 16:10)

1. Institut fiziki atmosfery AN SSSR.

MONIN, A.S.; YAGLOM, A.M.

Laws governing small-size turbulent motions of liquids and gases.
Usp. mat. nauk 18 no.5:93-114 S-O '63. (MIRA 16:12)

MONIN, A.S.

Climatology of heat balance. Izv. AN SSSR. Ser. geog. no.5:98-110 S-O '63. (MIRA 16:10)

MONIN, A.S. (Moscow)

"Modern problems of the theory of turbulence".

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 Jan - 5 Feb 64.

ACCESSION NR: AP4027590 S/0040/64/028/002/0319/0325

AUTHOR: Monin, A. S. (Moscow)

TITLE: Solution of a turbulence problem by the method of perturbation theory

SOURCE: Prikladnaya matematika i mekhanika, v. 28, no. 2, 1964, 319-325

TOPIC TAGS: turbulence, perturbation theory, turbulent motion, random force, characteristic functional, velocity field, scalar product, mathematical expectation, probability distribution, Fourier transform

ABSTRACT: The author uses the characteristic functional description of the statistical properties of turbulent motion of an incompressible fluid. The random field of exterior forces is assumed given and statistically-stationary in time; to it corresponds a statistically-stationary velocity field. The characteristic functional Λ of these two fields will be the solution of

$$\left[\left(\frac{\partial}{\partial t}+\nu k^2\right)D_{z_j}(\mathbf{k},t)-\Delta_{j\beta}(\mathbf{k})\,D_{\varphi_\beta}(\mathbf{k},t)\right]\Lambda = -\Delta_{j\beta}(\mathbf{k})\,k_\alpha\int d\mathbf{k}'\,D_{z_\alpha}(\mathbf{k}',t)\,D_{z_\beta}(\mathbf{k}-\mathbf{k}',t)\,\Lambda \quad \left(\Delta_{j\beta}(\mathbf{k})=\delta_{j\beta}-\frac{k_j k_\beta}{k^2}\right) \qquad (1)$$

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ACCESSION NR: AP4027590

where ν is the viscosity coefficient, $D_{s_j}(k,t)$ and $D_{g_j}(k,t)$ are operators of variational differentiation in $s_j(k,t)$ and $g_j(k,t)$, and where repeated indices denote summation, subject to the condition

$$\Lambda[0; g(k,t)] = G[g(k,t)] \quad (2)$$

where G is the given characteristic functional of the field of exterior forces. Finding of such a solution makes it possible to give a complete statistical description of stationary turbulence. Equation (1) is solved by the method of the theory of perturbations. As the field of exterior forces, the author uses a solenoidal, Gaussian, stationary, homogeneous, and isotropic random field with zero expectation. Orig. art. has: 4 figures and 23 formulas.

ASSOCIATION: Institut fiziki atmosfery* AN SSSR (Institute of Physics of the Atmosphere, AN SSSR)

SUBMITTED: 09Dec63 DATE ACQ: 28Apr64 ENCL: 00

SUB CODE: MM, AI NO REF SOV: 000 OTHER: 003

Card 2/2

S/0049/64/000/003/0394/0407

ACCESSION NR: AP4030341

AUTHORS: Malkevich, M. S.; Monin, A. S.; Rosenberg, O. V.

TITLE: The three dimensional structure of a radiation field as a source of meteorological information

SOURCE: AN SSSR. Izv. Ser. geofiz., no. 3, 1964, 394-407

TOPIC TAGS: artificial satellite, weather forecasting, radiation field, troposphere, stratosphere

ABSTRACT: The authors have pointed out the importance of world-wide observations in order to make satisfactory weather predictions, and they have found the use of artificial satellites for collecting meteorological data to offer both economy and geographic distribution of observational points. But, though the amount and universality of the information is increased, the type of information is qualitatively altered. The single source of information (for the lower layers of the atmosphere—the troposphere and stratosphere) is electrical radiation of various wavelengths reflected or emitted by the earth's surface and the surrounding atmosphere. Essentially the problem becomes a matter of spectral analysis of radiation

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ACCESSION NR: AP4030341

being lost by the planet. The authors describe the connection between structure of a radiation field and meteorological and other processes that have some effect on the radiation field. They describe the inhomogeneities of various scales in the radiation field and outline the physical origin of these inhomogeneities as well as the contribution they make in the recorded streams of radiation. They propose a method for computing atmospheric distortion when recording the structure of the underlying surface, and they also furnish definite recommendations for a method of observing the radiation field from artificial satellites. This involves principally a hemispherical receiver turned toward the earth and a device with the proper solid angle of view. Orig. art. has: 5 figures and 18 formulas.

ASSOCIATION: Akademiya nauk SSSR Institut fiziki atmosfery* (Academy of Sciences SSSR, Institute of Physics of the Atmosphere)

SUBMITTED: 20Jun63 DATE ACQ: 29Apr64 ENCL: 00

SUB CODE: ES NO REF SOV: 009 OTHER: 000

Card 2/2

KELER, V.R., otv. red.; MILLIONSHCHIKOV, M.D., akademik, red.; BLOKHIN, N.N., red.; BLOKHINTSEV, D.I., red.; GNEDENKO, B.V., akademik, red.; ZAYCHIKOV, V.N., red.; KELDYSH, M.V., akademik, red.; KIRILLIN, V.A., akademik, red.; KORITNOV, V.V., red.; MONIN, Andrey Sergeyevich, prof., doktor fiz.-matem. nauk, red. (1921); NESMEYANOV, A.N., akademik, red.; PARIN, V.V., red.; REBINDER, P.A., akademik, red.; SEMENOV, N.N., akademik, red.; FOK, V.A., akademik, red.; FRANTSOV, G.P., akademik, red.; ENGEL'GARDT, V.A., akademik, red.; KREMNEVA, G., red.; BALASHOVA, A., red.; BERG, A.I., akademik, red.

[Science and mankind, 1964; simple and precise information about the principal developments in world science] Nauka i chelovechestvo, 1964.; dostupno i tochno o glavnom v mirovoi nauke. Moskva, Izd-vo "Znanie," 1964. 424 p. (MIRA 18:1)

1. Deystvitel'nyy chlen AMN SSSR (for Blokhin, Parin). 2. Chlen-korrespondent AN SSSR (for Blokhintsev). 3. Akademiya nauk SSSR Ukr.SSR (for Gnedenko).

[illegible], Andrey Sergeyevich; [illegible]
Fed.

[Statistical [illegible]] [illegible]
Moskva, Nauka. [illegible]

[illegible] EWT(1)/FCC [illegible]
ACCESSION NR: AP5007596 S/0362/65/001/001/0045/0054

15
14

AUTHOR: Monin, A. S.
[illegible]

TITLE: Symmetry properties of turbulence in the surface layer of the air

SOURCE: AN SSSR. Izvestiya. Fizika atmosfery i okeana, v. 1, no. 1, 1965, 13 [illegible]
45-54

TOPIC TAGS: atmospheric physics, atmospheric turbulence, air turbulence, symmetry condition, atmospheric surface layer

ABSTRACT: Seven conditions of symmetry in the lowest layer of the atmosphere are considered: 1) stationarity; 2) horizontal uniformity; 3) horizontal [illegible] with respect to wind direction; 4) local uniformity along the vertical; [illegible] symmetry with respect [illegible]; 6) similitude; 7) local simili- [illegible]. These properties [illegible] hypotheses are [illegible] turbulent pulsations in wind velocity and temperature. Orig. art. has: 12 [illegible].

ASSOCIATION: Institut fiziki atmosfery, Akademiya nauk SSSR (Atmospheric physics [illegible]

L 1-55
ACCESSION NR: AP5007596

INSTITUTION: Academy of sciences, SSSR

SUBMITTED: 20Jan64 ENCL: 00 SUB CODE: SS

NO REF SOV: 010 OTHER: 002

2/2

ACCESSION NR: [illegible]

data concerning wind distribution in the boundary layer. Orig. art. has: 22 formulas.

ASSOCIATION: Akademiya nauk SSSR, Institut fiziki atmosfery (Academy of Sciences SSSR, Institute of Physics of the Atmosphere)

SUBMITTED: 27Aug64 ENCL: 00 SUB CODE: ES

NO REF SOV: 004 OTHER: 002

Card 2/2

MONIN, A.S.

Nonuniform temperature conditions in the atmospheric boundary layer. Izv. AN SSSR. Fiz. atm. i okeana 1 no.5:499-500 My '65. (MIRA 18:8)

1. Institut fiziki atmosfery AN SSSR.

EPF(c)/EWT(l)/FCC GW

ACCESSION NR: AP5019147

551.510.5

AUTHOR: Kolesnikova, V. N.

TITLE: The spectrum of meteorological fields

SOURCE: AN SSSR. Izvestiya. Fizika atmosfery i okeana, 1965

TOPIC TAGS: meteorological field, wind velocity oscillation, pressure oscillation, temperature oscillation, momentum flow oscillation, turbulent heat, mesometeorology

ABSTRACT: An exposition of ... analysis ... meteorological fields ... from a few ... The authors also present new data concerning the mesometeorological region of temperature variations. Spectra determined by the authors from ... temperature ... The processing was ... a constant ... spectral

ACCESSION NR: AP5019147

...er which is briefly described. Explanation of the presence of the in... interval in the synoptic region and of the appearance of the mesometeorolo... ...are given. "Some of the ... temperature readings were carried ... a modified device constr... V. ... in which the resistive ... thermometer was ... Wheatstone bridge ... variations ... the ... recorder ... a pulsation microthermometer were ... and ... Orig. art. has: ... formulas, ... figures, and ... tables.

...ATION: Institut fiziki atmosfery Akademiya nauk SSSR (Institute of the ... of the Atmosphere, Academy of Sciences SSSR)

... 30Mar65

... 116

L 29734-66 EWT(1)/ETC(f) WW

ACC NR: AP6010839 SOURCE CODE: UR/0421/66/000/001/0037/0043

AUTHOR: Monin, A. S. (Moscow)

ORG: none

TITLE: Turbulent heat transfer in a field of Archimedes forces

SOURCE: AN SSSR. Izvestiya. Mekhanika zhidkosti i gaza, no. 1, 1966, 37-43

TOPIC TAGS: turbulent heat transfer, Archimedes force, gas flow

ABSTRACT: The article analyzes the dependence of the pulsations of the temperature and of the turbulent heat flux on the nature of the stratification of a gas located in a field of Archimedes forces. It had been established earlier that in a gas there is not only a temperature stratification $\Theta(z)$, but also a velocity profile $u(z)$. The article starts with a mathematical consideration of the stability of the stratification of a gas. The mathematical treatment is based on the following expression:

$$R_i = \frac{g}{\theta}\frac{\partial\theta}{\partial z}\left(\frac{\partial u}{\partial z}\right)^{-2} \qquad (1.1)$$

where R_i is the Richardson number, g is the force of gravity, and Θ is

L 29734-66

ACC NR: AP6010839

the so-called potential temperature. It then proceeds to consider temperature pulsations with neutral stratification and the connection between turbulent heat flux and the temperature gradient. The article concludes with a lengthy review of the work of other authors in this field (referred to the bibliography). Orig. art. has: 8 formulas and 1 table.

SUB CODE: 20/ SUBM DATE: 04Nov65/ ORIG REF: 013/ OTH REF: 006

Card 2/2

L 29270-66 EWT(1)/FCC GW

ACC NR: AP6019345 SOURCE CODE: UR/0362/66/002/002/0113/0120

AUTHOR: Kolesnikova, V. N.; Monin, A. S.

ORG: Institute of Physics of the Atmosphere, AN SSSR (Institut fiziki atmosfery AN SSSR)

TITLE: Year-to-year variability of meteorological elements

SOURCE: AN SSSR. Izvestiya. Fizika atmosfery i okeana, v. 2, no. 2, 1966, 113-120

TOPIC TAGS: atmospheric temperature, atmospheric thermodynamics

ABSTRACT: The authors formulate the problem of comparison of the intra-annual, annual, year-to-year and secular variability of meteorological elements. It is postulated that for most of the weather elements the relation between these forms of variability is approximately identical. By the analysis of factual data it is demonstrated that the ratio of the year-to-year to intra-annual variability in the radiant heat flux at the earth's surface is approximately equal to the similar ratio for temperature. Orig. art. has: 4 figures, 3 formulas and 1 table. [JPRS]

SUB CODE: 04 / SUBM DATE: 17Sep65 / ORIG REF: 004 / OTH REF: 001

Card 1/1

L 06185-67 EWT(1) GW
ACC NR: AP6019510 SOURCE CODE: UR/0362/66/002/002/0113/0120

AUTHOR: Kolesnikova, V. N.; Monin, A. S.

25
B

ORG: Institute of Physics of the Atmosphere, Academy of Sciences SSSR (Akademiya nauk SSSR Institut fiziki atmosfery)

TITLE: The year-to-year variability of meteorological elements

SOURCE: AN SSSR. Izvestiya. Fizika atmosfery i okeana, v. 2, no. 2, 1966, 113-120

TOPIC TAGS: meteorologic observation, meteorology, annual variation, periodic function

ABSTRACT: The authors, while studying the time variations of meteorological elements (temperature, wind velocity, pressure, cloudiness, etc.), discovered in them components with a great variety of periods, from fractions of a second to tens of millenia. The entire spectrum of fluctuation periods is arbitrarily divided into nine classes. On the basis of an analysis of these periods, the authors formulate the problem of comparing the month-to-month, year-to-year, and secular variability of meteorological elements. A hypothesis proposed states that for a majority of weather elements the relationship between the types of variability is approximately identical. It is shown, by means of processing real data, that

Card 1/2 UDC: 551.506.3:551.583

L 06185-67

ACC NR: AP6019510

the relationship of the month-to-month and year-to-year variability in a radiation heat flux at the surface of the Earth is approximately equal to the corresponding relationship for temperature. Orig. art. has: 1 table and 4 figures.

SUB CODE: 08/ SUBM DATE: 17Sep65/ ORIG REF: 004/ OTH REF: 001

Card 2/2

ACC NR: AP7005460 SOURCE CODE: UR/0030/66/000/005/0039/0043

AUTHOR: Monin, A. S. (Doctor of physicomathematical sciences)

ORG: none

TITLE: Results and prospects of Soviet oceanology

SOURCE: AN SSSR. Vestnik, no. 5, 1966, 39-43

TOPIC TAGS: oceanographic research facility, oceanographic ship/Voyeykov oceanographic ship, Shokal'skiy oceanographic ship

ABSTRACT: The present status of Soviet oceanography is reviewed. The leading research institute is the Institute of Oceanology, which has a staff of about 1,000, including 20 doctors and 105 candidates of science. Half work in Moscow, and the others in divisions at Gelendzhik, Vladivostok, and Kaliningrad. Basic investigations in marine physics and chemistry are made by the Marine Hydrophysical Institute of the Academy of Sciences UkrSSR. An entire research city is being constructed at Sevastopol'. Important work in oceanology is done by specialists at Moscow, Leningrad and Far Eastern Universities and at the Leningrad Hydrometeorological Institute. Most research vessels are under the control of the All-Union Scientific Research Institute of Fisheries and Oceanography and its daughter institutes on the Atlantic and Pacific Oceans, at Murmansk, and

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ACC NR: AP7005460

on the Black Sea, Sea of Azov and Caspian Seas. For example, the scope of the Pacific Ocean division, TINRO, extends in both hemispheres, from the Arctic to Antarctica. The work of the State Oceanographic Institute and the Arctic and Antarctic Scientific Research Institute is impor... in the Arctic and in Antarctica. The Far Eastern Hydrometeorological Scientific Research Institute has the major vessels "Voyeykov" and "Shokal'skiy". The Ministry of the Navy makes no oceanographic studies of its own, depending on the other agencies. Some of the problems of oceanographic research are mentioned, and a few details are given concerning individual agencies and activities, but the article does not justify the general title given it; the article is too brief to give any overall picture of the status of oceanography in the USSR, and might rather be called an "introduction" to this topic. [JPRS: 37,710]

SUB CODE: 08 / SUBM DATE: none

Card 2/2

ACC NR: AP7013695 SOURCE CODE: UR/0213/66/006/006/1093/1099

AUTHOR: Monin, A. S.; Bogorov, V. G.

ORG: none

TITLE: Twentieth anniversary of the Institute of Oceanology of the academy of sciences USSR

SOURCE: Okeanologiya, v. 6, no. 6, 1966, 1093-1099

TOPIC TAGS: oceanography, oceanographic research facility, oceanographic personnel

SUB CODE: 08

ABSTRACT:
The article cited below is an extensive summarization of the work of the Institute of Oceanology during the last twenty years, the most important personalities who have participated in its activities, a progressive year-by-year account of the broadening of its field of operations, its cooperation with other agencies, its participation in international programs, its expeditions and research vessels and the outstanding advances it has contributed in the field of oceanology. Of particular interest is a listing of all the institute's expeditions, their dates, the vessels used, the regions involved and the name of

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0933 2148

ACC NR: AP7013695

the chief of the expedition. The specialists of the institute have produced more than 2,400 articles and 60 books. The transactions of the institute now constitute 80 volumes. Its associates have defended 10 doctoral dissertations and 76 candidate's dissertations. The present director is Andrey Sergeyevich Monin. There are two branches — the Pacific Ocean Division, in Vladivostok, and the Kaliningrad Division, in the city of the same name, both founded in 1961. The institute has a new laboratory in Moscow, has recently obtained the 6,800-ton research vessel "Akademik Kurchatov", and is scheduled to receive a number of smaller research vessels in the coming years. Orig. art. has: 1 table. [JPRS: 39,943]

ACC NR: AM7002476 ~~AM5018000~~ Monograph UR/

Monin, Andrey Sergeyevich; Yaglom, Akiva Moiseyevich

Statistical hydromechanics; turbulence mechanics (Statisticheskaya gidromekhanika; mekhanika turbulentnosti) pt. 1. Moscow, Izd-vo "Nauka", 65. 0639 p. illus., biblio. 7,000 copies printed

TOPIC TAGS: turbulent flow, laminar flow, hydrodynamics, probability, similarity theory, fluid mechanics, correlation function, Reynolds equation

PURPOSE AND COVERAGE: This is the first of two volumes on the theory of turbulent flow in liquids and gases. Specifically, the authors are concerned with the statistical properties of ensembles of currents characterized by macroscopically similar conditions. Basic information is given on equations in hydromechanics and their simplest corollaries and the genesis of turbulence and hydrodynamic instability, including elements in the theory of nonlinear instability. The following are discussed at various lengths: the theory of probability; the

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ACC NR: AM7002476

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theory of random fields; application of the concepts of dimensionality and similitude to turbulent flow in conduits, canals and boundary layers and to free turbulent flow; basic concepts in the semiempirical theory of turbulence; application of the theory of similitude to turbulence in a medium stratified vertically with respect to density; Lagrangian characteristics of turbulence; and the theory of turbulent diffusion. The book is intended for specialists in hydromechanics and theoretical physics. The authors express their thanks to A. M. Obukhov, L. A. Dikiy, Ye. A. Novikov, V. I. Tatarskiy, A. S. Gurvich, L. R. Tsvang (the latter two for their assistance on the subject of atmospheric turbulence), and G. S. Golitsyn.

TABLE OF CONTENT [abridged]:

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135110019-9"

ACC NR: AM7002476

~~AM5018099~~

SUB CODE: 20 / SUBM DATE: 10Dec64/ ORIG REF: 124/
OTH REF: 541

Card 3/3

MOKIN, G.G., uchitel'.

Organizing the work of students in the collective farm orchard.
Biol. v shkole no.4:52-56 Jl-Ag '58. (MIRA 11:9)

1. Chernskaya srednyaya shkola Chernskogo rayona Tul'skoy oblasti.
(Chern'--Fruit culture--Study and teaching)

LALAYANTS, A.M., glavnyy red.; ABRAMYAN, A.A., red.; GURERMAN, I.D., red.; DOKUKIN, A.V., red.; ZASADYCH, B.I., red.; LETOV, N.A., red.; LIVSHITS, I.I.; LOKSHIN, V.A.; MELAMED, Z.M.; MOMIN, O.I.; SUMCHENKO, V.A.; TOPCHIYEV, A.V.; SHEVALDIN, A.S.; YEGURNOV, G.P., red.; LYUBIMOV, N.G., red.izd-va; PROZOROVSKAYA, V.L., tekhn.red.

[Materials and equipment used in the coal industry; a handbook] Materialy i oborudovanie, primeniaemye v ugol'noi promyshlennosti; spravochnik. Moskva, Ugletekhizdat. Vol.2. [Equipment] Oborudovanie. Pt.3. 1957. 655 p. (MIRA 11:2)
(Coal mines and mining—Equipment and supplies)

KALMYKOV, Ye.P., inzh.; MONIN, G.I., inzh.; FRIDMAN, A.I., inzh.

New type of coal mines. Shakht. stroi. no.12:11-16 D '57.
(MIRA 11:1)

(Coal mines and mining)

BUCHNEV, V.K., prof., doktor tekhn. nauk; KALININ, R.A., dotsent; KORABLEV, A.A., kand. tekhn. nauk; MONIN, G.I., inzh.; BELYAYEV, V.S., kand. tekhn. nauk; MERKULOV, V.Ye., inzh.; ALEKSEYENKO, V.D., inzh.; IL'SHTEYN, A.M., kand. tekhn.nauk; GELESKUL, M.N., kand. tekhn.nauk; KOBISHCHANOV, M.A., kand. tekhn.nauk; DOBROVOL'SKIY, V.V., kand. tekhn. nauk; MALYSHEV, A.G., inzh.; VOROPAYEV, A.F., prof., doktor tekhn. nauk; LIDIN, G.D., prof., doktor tekhn.nauk; TOPCHIYEV, A.V., prof.; VEDERNIKOV, V.I., kand. tekhn.nauk; KUZ'MICH, I.A., kand. tekhn. nauk; LEYTES, Z.M., inzh.; SYSOYEVA, V.A., kand. tekhn. nauk; MELAMED, Z.M., kand. tekhn.nauk; CHERNAVKIN, N.N., inzh.; KARPILOVICH, M.Sh., inzh.; MEL'KUMOV, L.G., inzh.; BOGOPOL'SKIY, B.Kh., inzh.; FROLOV, A.G., doktor tekhn.nauk; KHVOSTOV, F.K., inzh.; BAGASHEV, M.K., kand. tekhn. nauk; KAMINSKIY, I.N., inzh.; PETROVICH, T.I., inzh.; ZHUKOV, V.V., red. izd-va; LOMILINA, L.N., tekhn. red.; PROZOROVSKAYA, V.L., tekhn. red.

[Mining engineers' handbook]Spravochnik gornogo inzhenera. Moskva, Gos.nauchno-tekhn. izd-vo lit-ry po gornomu delu, 1960. (MIRA 14:1)

(Mining engineering—Handbooks, manuals, etc.)

LYUL'KO, Yefrem Vladimirovich; MOMIN, Grigoriy Il'ich; FIALKOVSKIY, Aleksandr Makarovich; SANOVICH, P.O., otv.red.; CHEKHOVSKAYA, T.P., red.izd-va; PROZOROVSKAYA, V.L., tekhn.red.; SHKLYAR, S.Ya., tekhn.red.

[Standard practices for mine construction estimates] Smetnaia dokumentatsiia dlia stroitel'stva shakht. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po gornomu delu, 1960. 352 p. (Mining engineering) (MIRA 13:9)

MONIN, G.I.; MAKEYEV, Ye.B.; IZYGZON, N.B.

Basis of a method for faster calculation of monolithic underground constructions for workings having a large cross section. Trudy TSNIIPodzemshakhtstroia no.1:157-178 '62.
(MIRA 16:8)

(Mine timbering)

PA 228T102

MONIN, G. A.

USSR/Astronomy - Spectroheliograph 1951

"Spectroheliograph of the Crimean Astrophysical Observatory," G. A. Monin, A. B. Severnyy

"Iz Krymskoy Astrofiz Obser" Vol 7, pp 113-1?7

Evaluates various types of spectroheliographs. Describes the spectroheliograph constructed in the Crimean Astrophys Obs. It is located in the tower of the ?0-inch reflector, has grating and prism, and was adapted to cinematography. However, article states, photographs by this equipment showed periodical errors and the parts had to be adjusted.

228T102

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135110019-9"

USSR/Astronomy - Infrared Converter MONIN, G. A. Jul 53

"New Works of the Crimean Astrophysical Observatory," P. P. Dobronravin and G. D. Pikel'ner

Priroda, No 7, pp 50-56

Describes the history of the Crimean Observatory at Simeis, from 190?, the date of its origin, to the present. Discusses the works of G. A. Shayn and V. F. Gaze (ratios of numbers of isotopes in the atmosphere of stars, and carbon stars); P. P. Shayn (light from stars); P. P. Dobronravin (spectra); V. B. Nikonov, associate at Pulkovo Observatory, A. A. Kalinyak, and V. I. Krasovskiy (study of stellar infrared rays by means of electron-optical converters); I. S. Shklovskiy (theoretical radioastronomy); V. A. Ambartsumyan (red giants); Prof E. A. Vorontsov-Vel'yaminov (interstellar gas blown from the surface of hot stars); G. A. Monin and A. B. Severnyy (spectroheliograph designs); A. B. Gil'berg (light filters); E. R. Mustel (chromospheric outbursts); D. D. Maksutov, Corr-Mem Acad Sci USSR (studies with meniscus telescope-reflector system and coronograph).

258T56

S/712/62/028/000/014/020
E010/E401

AUTHORS: Martynchuk, N.A., Monin, G.A.

TITLE: A device for printing solar magnetic field maps

SOURCE: Akademiya nauk SSSR. Krymskaya astrofizicheskaya observatoriya. Izvestiya. v.28. 1962. 271-276

TEXT: The Krymskaya astrofizicheskaya observatoriya (Crimean Astrophysical Observatory) designed a device for printing solar magnetic field maps. The device represents an attachment to the electron potentiometer ЭПП-09 (EPP-09) used for recording longitudinal and transverse components of the solar magnetic field with a solar magnetograph. The signals are recorded not in the form of curves but in the form of numbers showing directly the strength and polarity of a field on the section of the solar surface investigated, which eliminates the necessity of processing the maps. The attachment prints maps with black numbers from 0 to 20 for one polarity and with red numbers, also from 0 to 20, for the opposite polarity of magnetic fields. The points with the same numbers, indicating the magnetic field strength, are connected by the curved lines, isogausses, and the map is then completed. The printing of numbers is performed by a printing

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E010/E401

A device for printing ...

wheel having 40 grooves with inserted stamps provided with engraved figures. A two-color tape is used to print black and red figures, in dependence on polarity of a field. The tape is lifted or lowered by an electromagnet functioning from contacts actuated by the printing wheel. The article contains a detailed description of the mechanical and electrical parts of the device and its operation. There are 3 speeds of the motion of a carriage which produces a line on the magnetic field map: 1.4, 2.8 and 5.6 mm/sec. A change in speed results in changing the map scale along the line in the ratio 1:2:4. The device was constructed in 1960 and in July 1961, after adjustment, was put into regular operation. There are 6 figures.

SUBMITTED: December 23, 1961

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MONIN, I. F.

USSR/Geophysics - Geoid Mar/Apr 52

"Problem of Investigation of Figure of Geoid by Gravimetric Method," I.F. Monin, Inst of Geol of Useful Minerals, Acad Sci Ural SSR

"Iz Ak Nauk SSSR, Ser Geofiz" No 2, pp 38-45

Points out some difficulties in the choice of formula for investigation of the Earth's figure. Presents and analyzes a formula by N.K. Migal (cf. Collection of L'vov Polytech Inst, "Theory of Simultaneous Determination of Figure and Dimensions of the Earth," 1949), facilitating investigation of terrestrial figure by gravimetric method and allowing one to avoid these difficulties. Received 21 Sep 51.

216T78

MONIN, I. F.

"Denudation of Continents and Deformation of the Geoid." Cand Tech Sci, L'vov, Polytechnic Inst, Min Higher Education USSR, L'vov, 1954. (KL No 5, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)
SO: Sum. No. 556, 24 Jun 55

MONIN, I.F.

Movement of the earth's axis and changes in its speed of rotation caused by denudation. Dokl. AN SSSR 105 no.2:260-263 '55. (MLRA 9:3)

1. L'vovskiy politekhnicheskiy institut. Predstavleno akademikom V.V. Shuleykinym.
(Earth--Rotation) (Chemical denudation)

3(1)

AUTHOR: Monin, I.F., Docent, Candidate of Technical Sciences SOV/154-59-6-6/19

TITLE: Solution of the Stokes Problem in a Particular Case

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Geodeziya i aerofotos"yemka, 1959, Nr 6, pp 59-64 (USSR)

ABSTRACT: The problem of Stokes (Ref 1) deals with finding the potential of gravity and the force of gravity itself both on a given surface and in the entire outer space on the strength of the given closed outside level surface, of mass, and of angular velocity of planetary rotation. Here, the solution of this problem is given for the case in which the center of gravity of the reference surface does not coincide with the center of mass of the earth. The simplest cases are investigated here, namely, those of a sphere and of a spheroid. Formula (6) is derived, in the case of the sphere, for the force of gravity at the level sphere; thus the problem of Stokes appears to be solved as regards the sphere. Formulas (10) and (16) are derived for the spheroid. By their aid it is possible to determine the potential of gravity and the force of gravity at the level ellipsoid, the center of which does not coincide

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Solution of the Stokes Problem in a Particular Case SOV/154-59-6-6/19

with the center of mass of the earth. Reference is made to the following papers: M.S. Molodenskiy (Ref 3), and D.V. Zagrebin (Ref 5). There are 5 Soviet references.

ASSOCIATION: L'vovskiy politekhnicheskiy institut (L'vov Polytechnic Institute)

SUBMITTED: April 6, 1959

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86011

S/154/60/000/005/004/005/XX
B012/B054

3.9000 (1041,1109,1327)

AUTHOR: Monin, I. F.

TITLE: The Theory of the Gravitational Field of the Regulated Earth

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Geodeziya i aerofotos"yemka, 1960, No. 5, pp. 57-61

TEXT: The formulas of M. S. Molodenskiy (Ref. 1) for the relationship between the geoid heights and the deflections from the vertical, the formula of M. S. Molodenskiy (Ref. 1) and V. A. Magnitskiy (Ref. 4) reciprocal to the formula of Vening-Meinesz (for the relationship between the deflections from the vertical and the gravity anomalies), and the formula of V. A. Magnitskiy (Ref. 2) and M. A. Molodenskiy (Ref. 1) reciprocal to the formula of Stokes (for the relationship between the geoid heights and the gravity anomalies) were obtained for a special case where the reference surface is a level spheroid whose center coincides with the center of inertia. N. K. Migal' (Ref. 6) studied the theory of the figure of the earth from a new angle. He suggested to use a reference

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surface whose center coincides with the terrestrial center of inertia. This makes it possible to solve various tasks without using the normal field. In this case, it is also possible to obtain relations between the characteristics of the gravitational field of the geoid. The formulas analogous to Stokes' and Vening-Meinesz' formulas had already been obtained by N. K. Migal' (Ref. 6) and T. N. Chalyuk (Ref. 11), respectively. In the present paper, the author obtains the formulas reciprocal to Stokes' and Vening-Meinesz' formulas, as well as the formula of Kallandro, and the formula for the second radial derivation

$\frac{\partial^2 W}{\partial \varrho^2}$. W is the gravitational potential on the sphere with the radius R. ϱ is the radius vector. It is assumed that the reference surface is not a level sphere. Two cases are dealt with: 1) The center of the reference surface coincides with the terrestrial center of inertia, and 2) it does not coincide. The origin of coordinates is assumed in the center of the sphere, and the axial direction is assumed as usual. The accuracy of the formulas derived here is nearly equal to that of Stokes' formula since the presuppositions for the derivation were the same. The coordinates

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of the terrestrial center of inertia in these formulas can be determined by the method of N. K. Migal' (Ref. 6) or from the spherical harmonic of the first order developed for g, with the use of data by I. D. Zhongolovich. The formulas obtained can be used in geology, terrestrial globe physics, and geodesy. For case 1), the author obtains formula (8) reciprocal to Stokes' formula:

$$g = \frac{g_m}{R}\zeta_0 + \frac{g_m}{2\pi}\iint\frac{\zeta-\zeta_0}{r^3}dS + \frac{W_0}{R} + \frac{2}{3}\omega^2R - \frac{3}{2}\omega^2R\cos^2\Phi$$

, then formula (11) reciprocal to Vening-Meinesz' formula:

$$g = \frac{g_m}{R}\zeta_0 + \frac{g_m}{2\pi R}\iint\frac{\partial\zeta}{\partial r}\left(\frac{R}{r^2} - \frac{1}{2r}\right)dS + \frac{W_0}{R} + \frac{2}{3}\omega^2R - \frac{3}{2}\omega^2R\cos^2\Phi$$

, Kallandro's formula (14):

$$\zeta_0 = \zeta_m - \frac{1}{4\pi}\iint\frac{\partial\zeta}{\partial r}\left(\frac{2}{r} - \frac{r}{2R^2}\right)dS,$$

and formulas (16) for the second radial derivation $\frac{\partial^2 W}{\partial \varrho^2}$:

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$$\frac{\partial^2 W}{\partial \varrho^2} = \frac{4g_0}{R} - \frac{6g_m}{R^2}\zeta_0 - \frac{2W_0}{R^2} + 10\omega^2\cos^2\Phi - \frac{8}{3}\omega^2 - \frac{1}{2\pi}\iint \frac{g-g_0}{r^3}dS.$$ For

case 2) the author obtains formula (20) reciprocal to Stokes' formula:

$$g = \frac{g_m}{R}\zeta_0 + \frac{g_m}{2\pi}\iint \frac{\zeta - \zeta_0}{r^3}dS + \frac{W_0}{R} + \frac{2}{3}\omega^2 R - \frac{5}{2}\omega^2 R\cos^2\Phi + 3\omega^2(x_0\cos L + y_0\sin L)\cos\Phi - \frac{\omega^2}{2R}(x_0^2 + y_0^2),$$

and formula (21) reciprocal to Vening-Meinesz' formula:

$$g = \frac{g_m}{R}\cdot\zeta_0 + \frac{g_m}{2\pi R}\iint \frac{\partial\zeta}{\partial r}\left(\frac{R}{r^2} - \frac{1}{2r}\right)dS + \frac{W_0}{R} + \frac{2}{3}\omega^2 R - \frac{5}{2}\omega^2 R\cos^2\Phi + 3\omega^2(x_0\cos L + y_0\sin L)\cos\Phi - \frac{\omega^2}{2R}(x_0^2 + y_0^2).$$

ζ is the

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acceleration of fall on the geoid, G_m is the mean acceleration of fall on the geoid, ζ is the height of the geoid in the running point on the sphere, and ζ_0 the height in the fixed point on the sphere, R is the radius of the sphere, ω is the angular velocity of the earth, L is the length of points on the sphere, r is the distance between the element of area dS on the spheroid and the point of the coordinates ϱ and Φ. ϱ is the radius vector, and Φ the geocentric width, W_0 is the gravitational potential on the geoid, x_0, y_0, and z_0 are the coordinates of the terrestrial center of inertia. There are 12 Soviet references.

ASSOCIATION: L'vovskiy politekhnicheskiy institut (L'vov Polytechnic Institute)

SUBMITTED: September 24, 1959

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3.4000
13.2000

S/154/60/000/005/005/008
B012/B060

AUTHOR: Monin, I. F., Candidate of Technical Sciences, Docent

TITLE: Determination of the Shape of the Regularized Geoid

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Geodeziya i aerofotos"yemka, 1960, No. 5, pp. 73 - 78

TEXT: The present paper offers the most general solution of the Stokes problem (known from the theory of the earth's shape) for the determination of the shape of the regularized geoid. The suitability of such a solution is substantiated by the following considerations: 1) Stokes' formula can be used as an approximate formula for determining the earth's shape according to the anomalies of gravity. For this reason, a general solution of the problem seems to be of particular interest. Papers by V. F. Yeremeyev (Ref.2) and M. S. Molodenskiy (Ref.3) are mentioned in this connection. 2) The formulas determining the shape of the regularized geoid will be useful later, once the geological exploration of the continents will be completed. 3) The general solution given here permits using the normal field of the earth. A paper by N. K. Migal' is mentioned

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Determination of the Shape of the Regularized Geoid

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B012/B060

in this connection (Ref.4). The cases are indicated in which Stokes' formula yields the distances between the geoid and the level ellipsoid and the cases in which it yields the distances between the geoid and the level sphere. Two cases are examined: the spherical case, in which the reference surface is a level sphere, and the spheroidal case in which the reference surface is a level ellipsoid of revolution. In both cases the potential U_o on the reference surface is assumed to be almost equal to the potential W_o on the geoid, but $U_o \neq W_o$; and secondly, the mass enclosed within the reference surface is assumed almost to equate the earth's mass. For the spherical case formula (12)

$$\zeta' = \frac{R}{4\pi\gamma'}\iint \Delta g'\left[S(\psi) - 1\right]d\sigma + \frac{W_o - U_o'}{\gamma'} + \frac{z_1}{\gamma'}$$

is derived. z_1 is a spherical function of first order. ζ is the geoid height. When γ' and U_o' are taken for the level sphere, one then obtains from this formula the distance between the regularized geoid and the sphere. If, however, γ' and U_o' are taken for the level ellipsoid, one

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Determination of the Shape of the Regularized Geoid S/154/60/000/005/005/008 B012/B060

obtains the distance between the geoid and the ellipsoid. The editors point out that an analogous formula was obtained for ζ outside the sphere by V. V. Brovar (Ref., Footnote on p. 76). Formula (21)

$$\zeta' = \frac{a}{4\pi\gamma'}\iint \left(\overline{\Delta g_1'} + \frac{3\gamma'}{2a} f_1 \zeta_1' e^2\right)\left[S(\psi) - 1\right] d\sigma + \frac{W_0 - U_1'}{\gamma} + \frac{z_1}{\gamma'}$$

is obtained for the spherical case. f is the gravitational constant. It is pointed out that formulas (12) and (21) given here are the most important of all in the practice. There are 8 Soviet references.

ASSOCIATION: L'vovskiy politekhnicheskiy institut (L'vov Polytechnic Institute)

SUBMITTED: May 14, 1960

S/006/60/000/008/009/009
B012/B059

AUTHOR: None given

TITLE: Chronicle

PERIODICAL: Geodeziya i kartografiya, 1960, No. 8, pp. 73-77

TEXT: From May 10-14, 1960 the Pyatoye Mezhduvedomstvennoye soveshchaniye po gravimetrii (Fifth Interdepartmental Conference on Gravimetry) was held in Moscow. It was convened by the Geodezicheskaya sektsiya Komiteta geodezii i geofiziki Akademii nauk SSSR (Section for Geodesy of the Committee of Geodesy and Geophysics of the Academy of Sciences USSR) and the Aerogravimetricheskaya laboratoriya Instituta fiziki Zemli AN SSSR (Laboratory for Aerogravimetry of the Institute of Physics of the Earth of the AS USSR). 216 representatives of 44 organizations took part in this conference: production organizations, research centers, testing and construction organizations, educational institutions, and organizations of the Akademiya nauk SSSR (Academy of Sciences USSR), Sibirskoye otdeleniye AN SSSR (Siberian Department of the

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AS USSR), Akademii nauk Ukrainskoy, Gruzinskoy, Litovskoy i Azerbaydzhanskoy SSR (Academies of Sciences of the Ukrainskaya, Gruzinskaya, Litovskaya, and Azerbaydzhanskaya SSR), Ministerstvo vysshego i srednego spetsial'nogo obrazovaniya SSSR (Ministry of Higher and Secondary Special Education of the USSR), Ministerstvo geologii i okhrany nedr SSSR (Ministry of Geology and Preservation of Mineral Resources), Komitet standartov, mer i izmeritel'nykh priborov pri Sovete Ministrov SSSR (Committee on Standards, Measures, and Measuring Instruments of the Council of Ministers USSR), NII VTS, Gosudarstvennyy komitet Soveta Ministrov SSSR po avtomatizatsii i mashinostroyeniyu (State Committee on Automation and Machine Construction of the Council of Ministers USSR), as well as representatives of the factories of the Moskovskiy sovnarkhoz (Moscow Sovnarkhoz) and the Leningradskiy sovnarkhoz (Leningrad Sovnarkhoz) that produce gravimetric apparatus. 70 lectures were held. [illegible] (Institut teoreticheskoy astronomii AN SSSR (Institute of Theoretical Astronomy of the AS USSR), spoke about the "Experience With Determining Some Parameters of the Gravitational Field of the Earth From Observations of the Second and

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Third Artificial Satellites". [illegible] (VNIIM) spoke about "The Determination of the Absolute Value of Gravitational Acceleration of the Point of VNIIM in Leningrad". [illegible] spoke about the "High-precision Pendulum Apparatus of the [illegible]", [illegible] about "Invariable Quartz Pendulums", [illegible] about "Questions of Time Recording in Pendulum Measurements", [illegible], [illegible], and [illegible] about the "Portable Gravimeter-Altimeter [illegible] (GVP-1)", [illegible] about the "Design of a [illegible] Gravimeter", [illegible] (IFZ AN SSSR (IPE AS USSR)) about "The Main Working Directions in the Field of Determining Gravitational Acceleration at the Sea", [illegible] about "The Theory of Determining Gravimeters, [illegible] on the [illegible] of Gravimeters", [illegible] "String Sea Gravimeters". [illegible] investigated in his lecture [illegible] errors already published in reports or submitted for publication by some authors. Among these are papers by [illegible] (L'vovskiy politekhnicheskiy institut (L'vov Polytechnic Institute)), [illegible] (Permskiy gosudarstvennyy universitet (Perm' State University)), and [illegible] (Leningradskiy gosudarstvennyy universitet

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Chronicle

S/006/60/000/[illegible]
B012/B054

(Leningrad State University)), [illegible] spoke about "The Errors of Interpolation of Gravity Anomalies and the Accuracy of Determining Gravimetric Deflections of the Vertical", [illegible] about "Errors of the Representation and Interpolation of [illegible] Anomalies". S. M. [illegible] reported on "Preliminary Results of [illegible] and [illegible] Work in the Antarctica", [illegible] on the "Structure of the Earth Crust in the Antarctica According to [illegible] Data", [illegible] on "The Structure of the Earth Crust in the Antarctica According to [illegible] Data". [illegible] spoke about the "Preparation and Use of [illegible] Aerophotos". The recommendations given by the Conference are mentioned. From April 19 to 22, 1960, a Scientific and Technical Conference of the Workers of the Topographic-Geodetic and the Surveying Service of the Glavnoye upravleniye geologii i okhrany nedr pri Sovete Ministrov Uzbekskoy SSR (Main Administration of Geology and Preservation of Mineral Resources of the Council of Ministers Uzbekskaya SSR) was held in Tashkent. There, the state of the topographic-geodetic and surveying work in the organizations of the Glavgeologiya UzSSR (Glavgeologiya UzSSR) and the introduction of new

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techniques and technology in production were discussed. At the Conference it was stated that the extent of the work mentioned will be considerably increased within the next seven years. Furthermore, the following drawbacks were pointed out: The methods applied are too extensive and expensive, the geological organizations are insufficiently equipped with new apparatus; in geological observations the aero-photographs and topographic plans available on a large scale are not sufficiently used. This state is explained by insufficient technical direction, insufficient technical and material supply, by a lack of suitable direction in the Glavgeologiya UzSSR and the Ministerstvo geologii i okhrany nedr SSSR (Ministry of Geology and Preservation of Mineral Resources of the USSR). Recommendations are given to improve this situation. For improving the qualifications of the workers the Conference suggested to convene scientific and technical conferences at regular intervals. For improving information and for the exchange of experience the editorial board of the present periodical was asked to furnish a section for topographic and geodetic work in geological observations. The participants in the Conference appealed to the workers

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of the Topografo-geodezicheskaya sluzhba Glavgeologii UzSSR (Topographic and Surveying Service of the Glavgeologiya UzSSR) to do everything possible in order to carry out the resolutions of the 21st Party Congress of the CPSU and the Plenum of the Central Committee of the CPSU in June.

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S/035/62/000/002/036/052
A001/A101

AUTHOR: Monin, I. P.

TITLE: On study of the Earth's shape without using the normal field

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 2, 1962, 23, abstract 2G139 ("Sb. statey po geod.," no. 11, 1960, 63-71)

TEXT: The author presents formulae for the heights of the regularized geoid over the non-levelled sphere and ellipsoid, as well as for the deviation of the vertical to the regularized geoid from the normal to the non-levelled ellipsoid. The centers of the sphere and ellipsoid are not superimposed with the center of the masses of the geoid. In the spherical case, N. K. Migal's result (Nauchn. zap. L'vovsk. politekhn. in-ta, 1949, no. 15, seriya geodezicheskaya, no. 1, 3-66) has been obtained in a simpler way. The derivation method for the ellipsoidal case was taken over from Molodenskiy ("Trudy TsNIIGAiK', 1956, no. 112). There are 6 references.

M. Yu.

[Abstracter's note: Complete translation]

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S/154/62/000/003/001/003
D045/D114

AUTHOR: Monin, I.F., Candidate of Technical Sciences, Docent

TITLE: A method of studying the Earth's shape without the use of the normal gravitational field

SOURCE: Vysshiye uchebnyye zavedeniya. Izvestiya. Geodeziya i aerofotos"yemka, no. 3, 1962, 59-68

TEXT: A method developed by N.K.Migal' for studying the Earth's shape without the use of the normal gravitational field is appraised and compared with the classical method, reference being made to several Soviet authors. The use of the method for determining (a) the shape of a regularized geoid and (b) the Earth's topographical surface is described with the aid of mathematical formulae. Conclusions: (1) The method developed by Migal' does not simplify problems of determining the Earth's shape and does not lead to new results - it only emphasizes the role of the normal gravitational field; (2) the solution obtained by Migal' is identical with those obtained by V.V.Brovar ("O vyvode i issledovanii formuly Stoksa" /"On the derivation and investigation of Stokes' formula"/,

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S/154/62/000/003/001/003
D045/D114

A method of studying the Earth's shape .....

Trudy MIIGAiK, vyp. 33, 1958) and the author ("K opredeleniyu figury regulyarizirovannogo geoida" /"Determining the shape of a regularized geoid"/, Izvestiya vuzov, razdel "Geodeziya i aerofotos"yemka", vyp. 131, 1960), where the normal gravitational field was considered.

ASSOCIATION: L'vovskiy politekhnicheskiy institut (L'vov Polytechnic Institute)

SUBMITTED: June 21, 1961

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