

Maps list

Part Two NATURAL ENVIRONMENT

21. GEOLOGICAL STRUCTURE

21.1 Surficial geological formations

Jan Rzechowski

1. Surficial geological formations 1:1500000
2. Thickness of quaternary formations 1:6000000

21.2 Pre-quaternary formations

1. Pre-quaternary formations 1:1500000

Marcin Piwocki

2. Hypsometry of sub-quaternary surface 1:4500000

Marcin Piwocki, Jan Rzechowski

21.3 Tectonics

Tectonics 1:1500000

Jerzy Znosko

21.4 Mineral resources (industrial minerals excluded)

Mineral resources (industrial minerals excluded) 1:1500000

Maciej Podemski, Marcin Piwocki, Tadeusz Osmolski, Jadwiga Krolicka

21.5 Industrial minerals

Krystyna Wyrwicka

1. Hard rock resources 1:3000000
2. Clastic resources 1:3000000

Krystyna Wyrwicka

3. Clay resources 1:3000000

Krystyna Wyrwicka

4. Resources of industrial minerals 1:3000000

Total resources

Diagrams

5. Stratigraphic classification of industrial resources

Table

22. GEOPHYSICAL PHENOMENA

22.1 Geophysical phenomena

1. Gravimetric anomalies 1:3000000
Stefan Mlynarski
2. Magnetic anomalies 1:3000000
Stefan Mlynarski
3. Velocities of recent vertical movements of the earth crust surface 1:6000000
Tadeusz Wyrzykowski
4. Distribution of the heat flow 1:6000000
Stefan Mlynarski
5. Thickness of sedimentary cover 1:6000000
Stefan Mlynarski
6. Seismic activity 1:6000000
Barbara Guterch, Hanna Lewandowska-Marciniak
7. Geotectonic division by deep seismic sounding methods 1:6000000
Aleksander Guterch
8. Structure of the earth's crust along international profiles
Profiles
Aleksander Guterch

23. RELIEF

23.1 Hypsometry

Jerzy Ostrowski
Hypsometry 1:1500000
Hypsographic curve of Poland
Graph

23.2 Origin and age of relief

1. Relief origin 1:1500000
Sylwia Gilewska, Maria Klimek
2. Major morphogenic zones and absolute age of the relief evolution 1:6000000
Sylwia Gilewska

23.3 Contemporary relief modelling processes

1. Types of present-day relief modelling 1:3000000
Miroslaw Bogacki
2. Karst phenomena 1:3000000
Sylwia Gilewska
3. Potential soil wash 1:6000000
Czeslaw Jozefaciuk
4. Land-slide occurrence 1:6000000
Tadeusz Zietara
5. Land-slide occurrence in the Carpathians 1:1500000
Tadeusz Zietara
6. Land-slide of Mt. Cergowa Gora 1:15000
Tadeusz Zietara

23.4 Origin and age of relief (examples)

1. The Ilawa Lake District (vicinity of Sztum) 1:50000
Eugeniusz Drozdowski
2. The Middle Notec Valley 1:50000
Jan Szupryczynski
3. The Naleczow Plateau 1:50000
Andrzej Kesik
4. The Swietokrzyskie (Holly Cross) Mountains 1:50000
Tadeusz Klatka, Halina Klatka
5. The Silesian Beskid 1:50000

31. CLIMATE

31.1 Sunshine

Mieczyslaw Kuczarski

1. Total winter (XII-II) sunshine - 10% probability 1:6000000
 2. Mean total winter (XII-II) sunshine 1:6000000
 3. Total winter (XII-II) sunshine - 90% probability 1:6000000
 4. Total spring (III-V) sunshine - 10% probability 1:6000000
 5. Mean total spring (III-V) sunshine 1:6000000
 6. Total spring (III-V) sunshine - 90% probability 1:6000000
 7. Total summer (VI-VIII) sunshine - 10% probability 1:6000000
 8. Mean total summer (VI-VIII) sunshine 1:6000000
- Mieczyslaw Kuczarski
9. Total summer (VI-VIII) sunshine - 90% probability 1:6000000
 10. Total autumn (IX-XI) sunshine - 10% probability 1:6000000
 11. Mean total autumn (IX-XI) sunshine 1:6000000
 12. Total autumn (IX-XI) sunshine - 90% probability 1:6000000
 13. Total annual sunshine - 10% probability 1:6000000
 14. Mean total annual sunshine 1:6000000
 15. Total annual sunshine - 90% probability 1:6000000

31.2 Radiation, air temperature

1. Mean global solar radiation in January 1:6000000
Janusz Paszynski, Krystyna Miara
2. Mean global solar radiation in April 1:6000000
Janusz Paszynski, Krystyna Miara
3. Mean global solar radiation in July 1:6000000
Janusz Paszynski, Krystyna Miara
4. Mean global solar radiation in October 1:6000000
Janusz Paszynski, Krystyna Miara
5. Mean annual global solar radiation 1:6000000
Janusz Paszynski, Krystyna Miara
6. Mean all-wave net radiation in January 1:6000000
Janusz Paszynski, Krystyna Miara
7. Mean all-wave net radiation in April 1:6000000
Janusz Paszynski, Krystyna Miara
8. Mean all-wave net radiation in July 1:6000000
Janusz Paszynski, Krystyna Miara
9. Mean all-wave net radiation in October 1:6000000
Janusz Paszynski, Krystyna Miara
10. Mean all-wave net radiation during whole year 1:6000000
Janusz Paszynski, Krystyna Miara
11. Mean monthly air temperature in January 1:6000000
Teresa Kozłowska-Szczesna
12. Mean monthly air temperature in April 1:6000000
Teresa Kozłowska-Szczesna
13. Mean monthly air temperature in July 1:6000000
Teresa Kozłowska-Szczesna
14. Mean monthly air temperature in October 1:6000000
Teresa Kozłowska-Szczesna
15. Mean annual air temperature 1:6000000
Teresa Kozłowska-Szczesna

31.3 Thermic characteristics

1. Mean duration of thermic winter (season with mean daily temperature below 00C) 1:6000000
Danuta Limanowka, Tadeusz Niedzwiedz
2. Mean monthly temperature of January - 10% probability 1:6000000
Tadeusz Niedzwiedz, Zbigniew Ustrnul
3. Mean monthly temperature of January - 90% probability 1:6000000
Tadeusz Niedzwiedz, Zbigniew Ustrnul
4. Annual number of frosty days, i.e. with maximal temperature below 00C - 10% probability) 1:6000000
Tadeusz Niedzwiedz, Zbigniew Ustrnul
5. Annual number of frosty days, i.e. with maximal temperature below 00C - 50% probability) 1:6000000
Tadeusz Niedzwiedz, Zbigniew Ustrnul
6. Mean duration of thermic summer (season with mean daily temperature above 150C) 1:6000000
Danuta Limanowka, Tadeusz Niedzwiedz
7. Mean monthly temperature of July - 10% probability 1:6000000
Tadeusz Niedzwiedz, Zbigniew Ustrnul
8. Mean monthly temperature of July - 90% probability 1:6000000
Tadeusz Niedzwiedz, Zbigniew Ustrnul
9. Annual number of hot days, i.e. with maximal temperature above 250C - 10% probability) 1:6000000
Tadeusz Niedzwiedz, Zbigniew Ustrnul
10. Annual number of hot days, i.e. with maximal temperature above 250C - 50% probability) 1:6000000
Tadeusz Niedzwiedz, Zbigniew Ustrnul
11. Annual absolute maximal air temperature - 10% probability 1:6000000
Tadeusz Niedzwiedz, Zbigniew Ustrnul
12. Annual absolute maximal air temperature - 50% probability 1:6000000
Tadeusz Niedzwiedz, Zbigniew Ustrnul
13. Annual absolute minimal air temperature - 50% probability 1:6000000
Tadeusz Niedzwiedz, Zbigniew Ustrnul
14. Annual absolute minimal air temperature - 90% probability 1:6000000
Tadeusz Niedzwiedz, Zbigniew Ustrnul
15. Mean annual amplitudes of air temperature 1:6000000
Tadeusz Niedzwiedz, Zbigniew Ustrnul

31.4 Freeze, snow cover, twenty-four hours precipitation

1. Dates of first autumn freeze of 00C - 10% probability 1:6000000
Tadeusz Niedzwiedz, Danuta Limanowka, Zbigniew Ustrnul
2. Dates of first autumn freeze of 00C - 50% probability 1:6000000
Tadeusz Niedzwiedz, Danuta Limanowka, Zbigniew Ustrnul
3. Dates of last spring freeze of 00C - 10% probability 1:6000000
Tadeusz Niedzwiedz, Danuta Limanowka, Zbigniew Ustrnul
4. Dates of last spring freeze of 00C - 50% probability 1:6000000
Tadeusz Niedzwiedz, Danuta Limanowka, Zbigniew Ustrnul
5. Duration of the freeze-free period - 10% probability 1:6000000
Tadeusz Niedzwiedz, Danuta Limanowka, Zbigniew Ustrnul
6. Duration of the freeze-free period - 50% probability 1:6000000
Tadeusz Niedzwiedz, Danuta Limanowka, Zbigniew Ustrnul
7. Duration of the freeze-free period - 90% probability 1:6000000
Tadeusz Niedzwiedz, Danuta Limanowka, Zbigniew Ustrnul
8. Annual number of days with snow cover - 10% probability 1:6000000
Tadeusz Niedzwiedz, Danuta Czekerda, Danuta Limanowka
9. Annual number of days with snow cover - 50% probability 1:6000000
Tadeusz Niedzwiedz, Danuta Czekerda, Danuta Limanowka
10. Annual number of days with snow cover - 90% probability 1:6000000
Tadeusz Niedzwiedz, Danuta Czekerda, Danuta Limanowka
11. Maximum depths of snow cover - 10% probability 1:6000000
Tadeusz Niedzwiedz, Danuta Czekerda, Danuta Limanowka
12. Annual number of days with precipitation above 10 mm - 10%

probability 1:6000000

Tadeusz Niedzwiedz, Danuta Czekierda, Danuta Limanowka

13. Annual number of days with precipitation above 10 mm - 90%

probability 1:6000000

Tadeusz Niedzwiedz, Danuta Czekierda, Danuta Limanowka

14. Annual maximum rainfall in 24 hours - 10% probability 1:6000000

Tadeusz Niedzwiedz, Elzbieta Cebulak

15. Annual maximum rainfall in 24 hours - 50% probability 1:6000000

Tadeusz Niedzwiedz, Elzbieta Cebulak

31.5 Precipitation

Tadeusz Niedzwiedz, Elzbieta Cebulak

1. Winter (XII-II) precipitation - 10% probability 1:6000000

2. Winter (XII-II) precipitation - 50% probability 1:6000000

3. Winter (XII-II) precipitation - 90% probability 1:6000000

4. Spring (III-V) precipitation - 10% probability 1:6000000

5. Spring (III-V) precipitation - 50% probability 1:6000000

6. Spring (III-V) precipitation - 90% probability 1:6000000

7. Summer (VI-VIII) precipitation - 10% probability 1:6000000

8. Summer (VI-VIII) precipitation - 50% probability 1:6000000

9. Summer (VI-VIII) precipitation - 90% probability 1:6000000

10. Autumn (IX-XI) precipitation - 10% probability 1:6000000

11. Autumn (IX-XI) precipitation - 50% probability 1:6000000

12. Autumn (IX-XI) precipitation - 90% probability 1:6000000

13. Annual precipitation - 10% probability 1:6000000

14. Annual precipitation - 50% probability 1:6000000

15. Annual precipitation - 90% probability 1:6000000

31.6 Winds

Tadeusz Niedzwiedz, Janusz Paszynski, Danuta Czekierda

1. Frequency of wind from the northern sector during winter half-year (November to April) 1:6000000

2. Frequency of wind from the northern sector during summer half-year (May to October) 1:6000000

3. Annual frequency of wind from the northern sector 1:6000000

4. Frequency of wind from the eastern sector during winter half-year (November to April) 1:6000000

5. Frequency of wind from the eastern sector during summer half-year (May to October) 1:6000000

6. Annual frequency of wind from the eastern sector 1:6000000

7. Frequency of wind from the southern sector during winter half-year (November to April) 1:6000000

8. Frequency of wind from the southern sector during summer half-year (May to October) 1:6000000

9. Annual frequency of wind from the southern sector 1:6000000

10. Frequency of wind from the western sector during winter half-year (November to April) 1:6000000

11. Frequency of wind from the western sector during summer half-year (May to October) 1:6000000

12. Annual frequency of wind from the western sector 1:6000000

13. Average annual number of days with very strong wind (above 15 m./sec.) 1:6000000

14. Average annual number of days with strong wind (above 10 m./sec.) 1:6000000

15. Average annual frequency of calm and of light wind (under 2 m./sec.) 1:6000000

31.7 Synoptic characterization of climate

Tadeusz Niedzwiedz

1-7. Typical synoptic situations in Europe (examples)

1. Westerly cyclonic situation 1:6000000

2. Easterly and southeasterly anticyclonic situation 1:6000000
3. Northeasterly anticyclonic situation 1:6000000
4. Northerly anticyclonic situation 1:6000000
5. Southerly anticyclonic situation 1:6000000
6. Northeasterly and northerly cyclonic situation 1:6000000
7. Center of anticyclonic over Poland 1:6000000
8. Anomalies of the mean daily temperature in January in the westerly cyclonic situation 1:6000000
9. Anomalies of the mean daily temperature in January in the easterly and southeasterly anticyclonic situation 1:6000000
10. Anomalies of the mean daily temperature in July in the northwesterly cyclonic situation 1:6000000
11. Anomalies of the mean daily temperature in July in the easterly and southeasterly anticyclonic situation 1:6000000
12. Mean daily sums of precipitation in July in the northwesterly cyclonic situation 1:6000000
13. Mean daily sums of precipitation in July in the northeasterly and easterly cyclonic situation 1:6000000

31.8 Weather types, climatic regions

Alojzy Wos

1-5. Weather types (examples)

1. Days with very warm and cloudy weather, no precipitation 1:6000000
2. Days with moderately warm and very cloudy weather, precipitation 1:6000000
3. Days with ground-frost, very cool and very cloudy weather, precipitation 1:6000000
4. Days with moderately frosty and very cloudy weather, precipitation 1:6000000
5. Days with fairly frosty and cloudy weather, no precipitation 1:6000000
6. Climatic regions 1:2500000
7. Mean annual number of days with selected weather types in particular climatic regions

Table

32. WATERS

32.1 Surface waters

Andrzej Czerny

1. Surface waters 1:1500000
2. Major river basins 1:6000000

River basins above 1000 km²

Table

32.3 Runoff of rivers

1. Regimen of river runoff 1:2500000

Irena Dynowska

Variability of runoff in annual cycle

Graphs

Irena Dynowska

2. Mean unit runoff (1951-1970) 1:4500000

Juliusz Stachý, Boguslaw Biernat

3. Maximum unit runoff 1:4500000

Barbara Fal, Jerzy Punzet

4. Mean low unit runoff (1951-1970) 1:4500000

Juliusz Stachý, Boguslaw Biernat

5. Typical periods of floods occurrence 1:4500000

Boguslaw Biernat

6. Characteristic discharges in the larger rivers

Table

Juliusz Stachý

32.4 Ice phenomena, denudation of drainage areas

1. Average dates of appearance of ice phenomena 1:4500000
Julian Golek
2. Average dates of disappearance of ice phenomena 1:4500000
Julian Golek
3. Duration of ice phenomena 1:4500000
Julian Golek
4. Average dates of appearance of ice cover 1:4500000
Julian Golek
5. Average dates of disappearance of ice cover 1:4500000
Julian Golek
6. Duration of ice cover 1:4500000
Julian Golek
7. Thermal pollution of rivers I 1:4500000
Julian Golek
8. Thermal pollution of rivers II 1:4500000
Julian Golek
9. Denudation of drainage areas 1:4500000
Jan Branski

32.5 Ground waters I

- Bronislaw Paczynski
1. Fresh ground waters 1:1500000
 2. Hydrogeological regions 1:7 500000
 3. Hydrogeological cross-section of north-west Poland

32.6 Ground waters II

- Occurrence of phreatic groundwater level and its dynamics 1:1500000
Malgorzata Gutry-Korycka, Grazyna Gadomska

32.7 Mineral and thermal waters

- Zenobiusz Plochniewski
1. Mineral and thermal waters 1:1500000
 2. Regions of occurrence of mineral waters 1:7 500000

32.8 Water balance

- Malgorzata Gutry-Korycka
- 1-6. Elements of water balance (1931-1960)
 1. Real precipitation (Pr) 1:4500000
 2. Average runoff (H) 1:4500000
 3. Surface runoff (Hp) 1:4500000
 4. Groundwater runoff (Hg) 1:4500000
 5. Deficit of runoff (E) 1:4500000
 6. Coefficient of runoff () 1:4500000
 7. Types of water balance (1931-1960) in relationship with physico-geographical features of basins 1:3000000

41. SOILS

41.1 Soils - genetic classification

- Soils. Genetic classification 1:1500000
Stanislaw Bialousz

41.2 Properties of soils

1. Granularity 1:3000000
Stanislaw Bialousz
2. Water conditions 1:3000000
Lidia Ochalska
3. Soil reaction 1:3000000
Henryk Kern
4. Occurrence of calcium carbonate 1:3000000
Henryk Kern

41.3 Soils - qualitative classification

Soils. Qualitative classification 1:1500000
Jan Strzelec

42. VEGETATION

42.1 Potential natural vegetation

Potential natural vegetation 1:1500000
Wladyslaw Matuszkiewicz, Bozena Degorska

42.2 Natural-forest regions

1. Natural-forest regions 1:1500000
Tadeusz Trampler, Anna Kliczkowska, Elzbieta Dmyterko,
Bozena Degorska
2. Afforestation (in sections) 1:6000000
Anna Kliczkowska, Elzbieta Dmyterko, Bozena Degorska

42.3 Forest site structure

1. Forest site types 1:1500000
Tadeusz Trampler, Anna Kliczkowska, Elzbieta Dmyterko,
Bozena Degorska
2. Species structure of tree covers (in regions) 1:6000000
Anna Kliczkowska, Elzbieta Dmyterko, Bozena Degorska

42.4 Limits of some plants, peatlands

1. Some geographically important non-zonal vegetation types 1:3000000
Wladyslaw Matuszkiewicz
2. Limits of some geographically important species of trees 1:3000000
Wladyslaw Matuszkiewicz
3. Peat deposits 1:3000000
Slawomir Zurek
4. Age of peatlands 1:3000000
Slawomir Zurek

42.5 Vegetation landscapes and geobotanical regions

Jan M. Matuszkiewicz

1. Vegetation landscapes 1:2500000
2. Geobotanical regions 1:2500000

43. FAUNA

43.1 Animal world and its dynamics

1. The European pond tortoise 1:6000000
Zbigniew Glowacinski, Joanna Plit

2. The wolf 1:6000000
Zbigniew Glowacinski, Joanna Plit
3. The elk 1:6000000
Zbigniew Glowacinski, Joanna Plit
4. The hazel hen 1:6000000
Zbigniew Glowacinski, Joanna Plit
5. The wood grouse 1:6000000
Zbigniew Glowacinski, Joanna Plit
6. The great bustard 1:6000000
Zbigniew Glowacinski, Joanna Plit
7. The collared dove 1:6000000
Zbigniew Glowacinski, Joanna Plit
8. The black stork 1:6000000
Piotr Profus
9. Bird migrations 1:6000000
Maciej Gromadzki, Joanna Plit
10. Zoogeographic regionalization 1:3000000
Andrzej Samuel Kostrowicki
11. Structure of vertebrate fauna
Diagrams
Andrzej Samuel Kostrowicki

43.2 Occurrence limits of selected animal species

1. Mammals I 1:4500000
Andrzej Samuel Kostrowicki, Joanna Plit
2. Mammals II 1:4500000
Andrzej Samuel Kostrowicki, Joanna Plit
3. Birds I 1:4500000
Andrzej Samuel Kostrowicki, Joanna Plit
4. Birds II 1:4500000
Andrzej Samuel Kostrowicki, Joanna Plit
5. Fishes 1:4500000
Andrzej Samuel Kostrowicki, Joanna Plit
6. Amphibians and reptiles 1:4500000
Andrzej Samuel Kostrowicki, Joanna Plit
7. Invertebrates 1:4500000
Andrzej Samuel Kostrowicki, Joanna Plit
8. Snails, slugs and bivalves 1:4500000
Adolf Riedel, Joanna Plit
9. Rare species 1:4500000
Andrzej Samuel Kostrowicki, Joanna Plit

51. TRANSFORMATION OF ENVIRONMENT

51.1 Environment degradation

Environment degradation 1:1500000
Jolanta Wojcik, Lidia Sroka

52. ENVIRONMENT PROTECTION

52.1 Protection of nature

Jan Rutkowski

1. Protected areas 1:1500000
2. Nature monuments and protected areas in voivodships 1:6000000

53. PHYSICO-GEOGRAPHICAL SYNTHESIS

53.1 Types of natural landscapes

Types of natural landscapes 1:1500000
Andrzej Richling, Andrzej Dabrowski

53.2 Landscape use

Landscape use 1:1500000
Andrzej Richling, Wojciech Lewandowski, Andrzej Dabrowski

53.3 Physico-geographical regions

Jerzy Kondracki, Andrzej Richling
1. Physico-geographical regions 1:1500000
2. High-rank regions 1:6000000

53.4 Physico-geographical regions (examples of microregions)

1. The South-Baltic Lake Districts and Central Polish Lowlands (Vicinity of Plock) 1:200000
Jerzy Kondracki, Andrzej Richling
2. The Masurian Lake District (Vicinity of Gizycko) 1:200000
Jerzy Kondracki, Andrzej Richling
3. The Malopolska Upland (The Little Poland Upland) (Vicinity of Kielce) 1:200000
Jerzy Kondracki, Andrzej Richling
4. The Outer Western Carpathian Mountains (Vicinity of Nowy Sacz) 1:200000
Krystyna German, Jerzy Kondracki