NEEDS CAPACITY BUILDING IN THE HYDROLOGY SECTION OF IMH

IGWCO meeting
March 2, 2005, Tokyo, Japan

D.AZZAYA,
INSTITUTE OF METEOROLOGY AND HYDROLOGY,
MONGOLIA

Mongolia

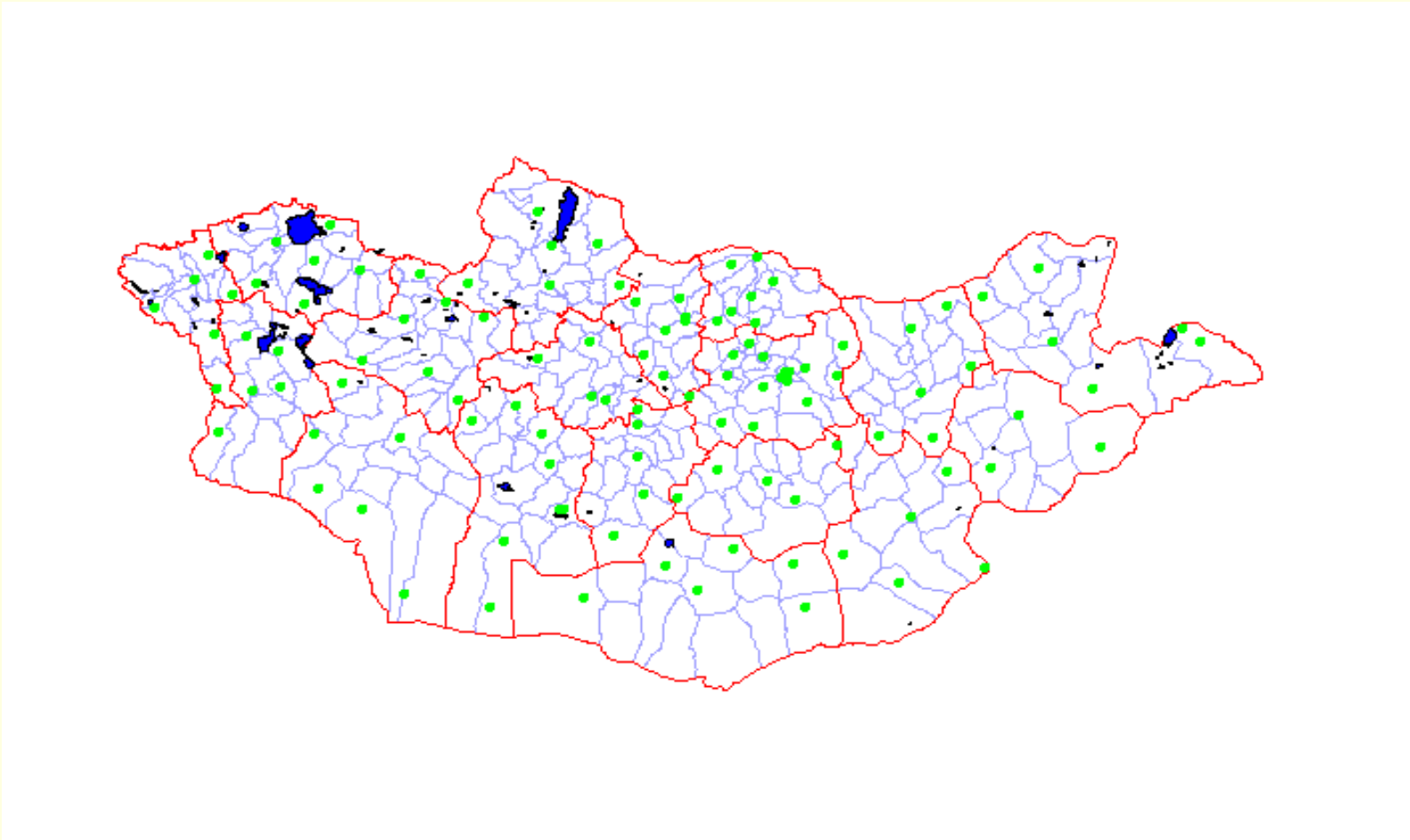
- Land country
- Water resources are limited
  - 5,153 rivers and streams
  - 9,582 springs
  - 3,854 lakes

INSTITUTE OF METEOROLOGY AND HYDROLOGY, MONGOLIA

DATA

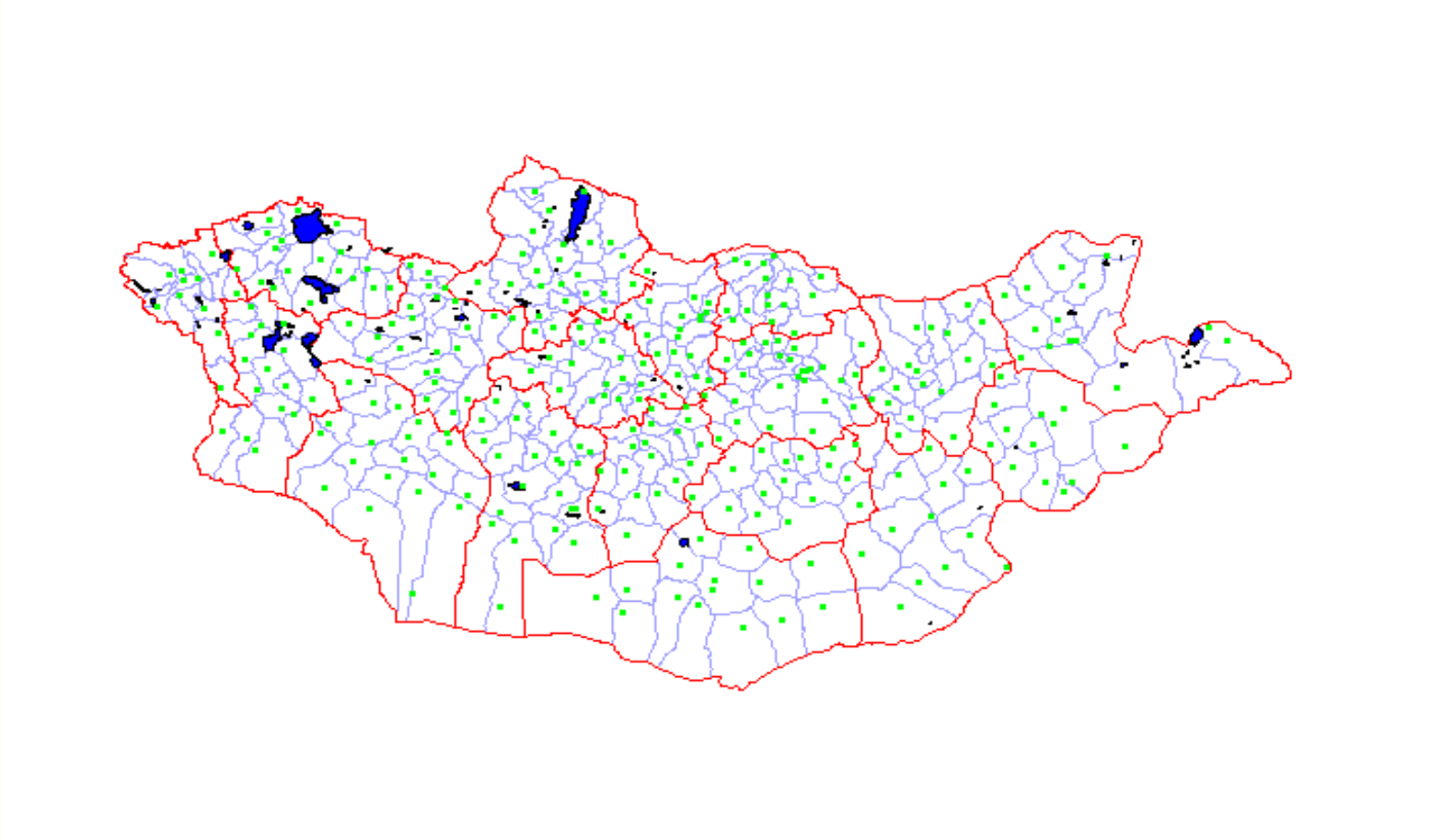
- Ground based data
- Remote sensed data
  - Satellite data, NOAA and FY
  - Doppler radar data
  - Radiozonde data, Dijicora and Modem

LOCATION OF THE METEOROLOGICAL STATIONS, 120

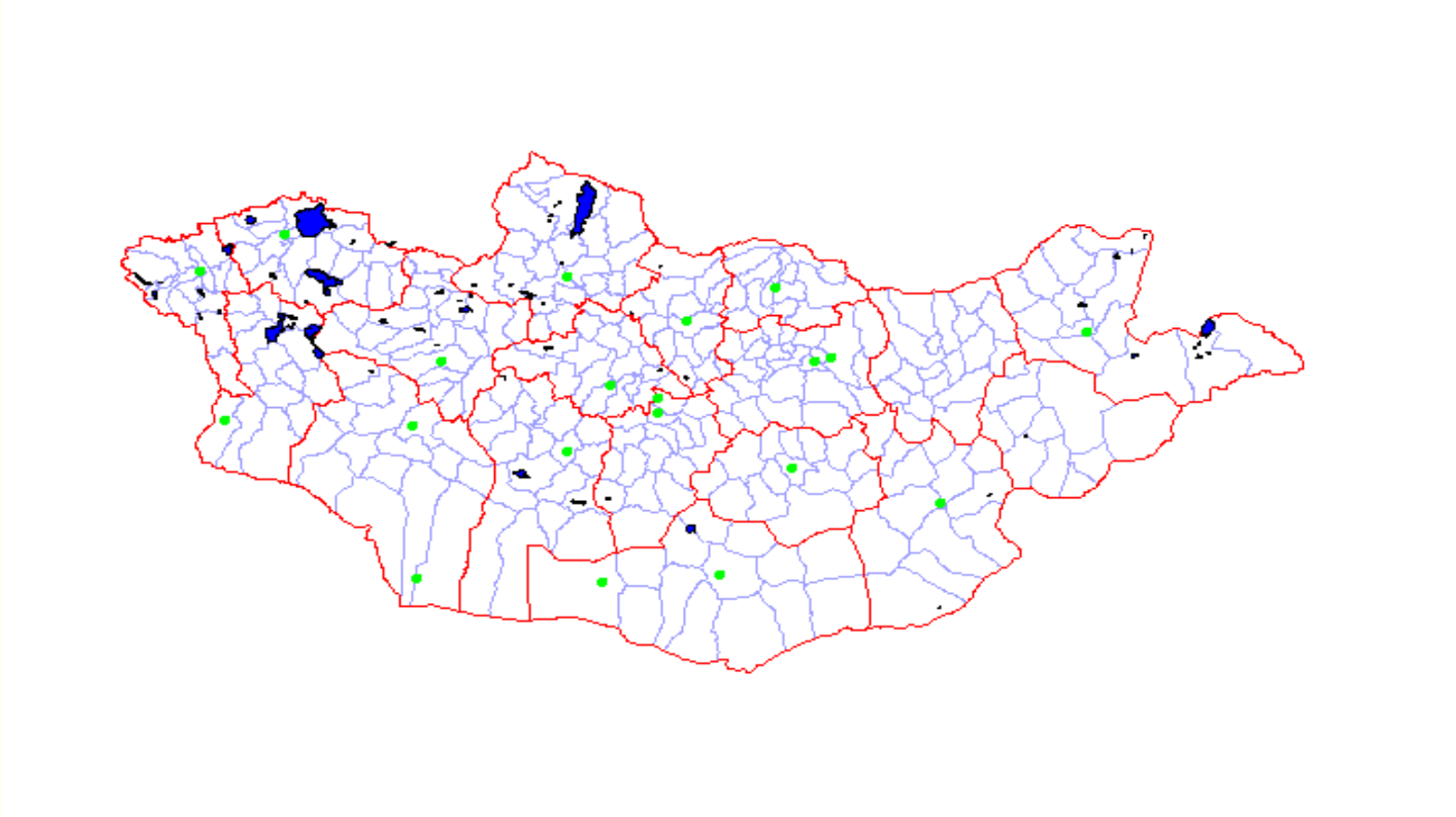


METEOROLOGICAL STATION, DARKHAN

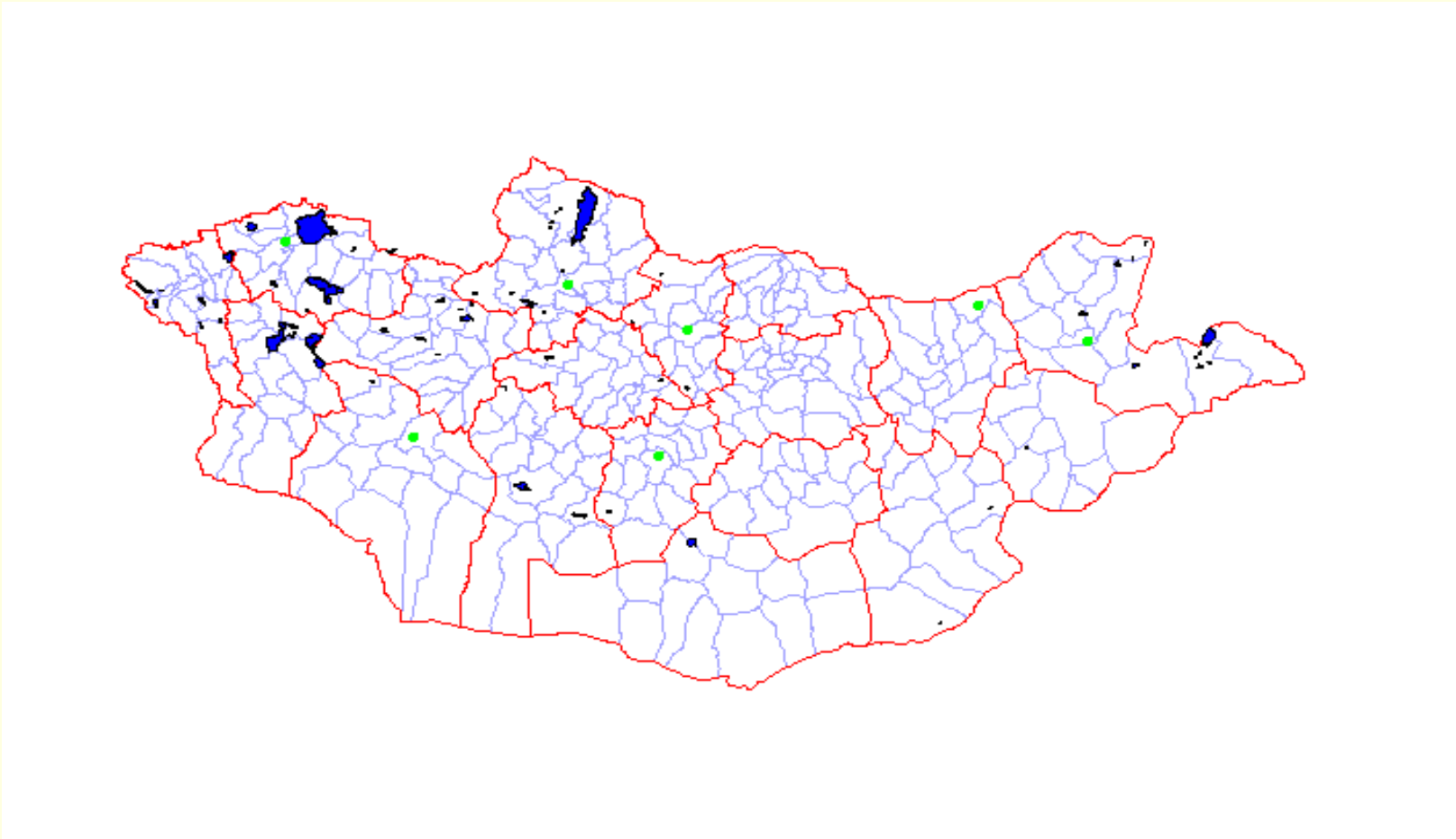
LOCATION OF THE METEOROLOGICAL POSTS, 200



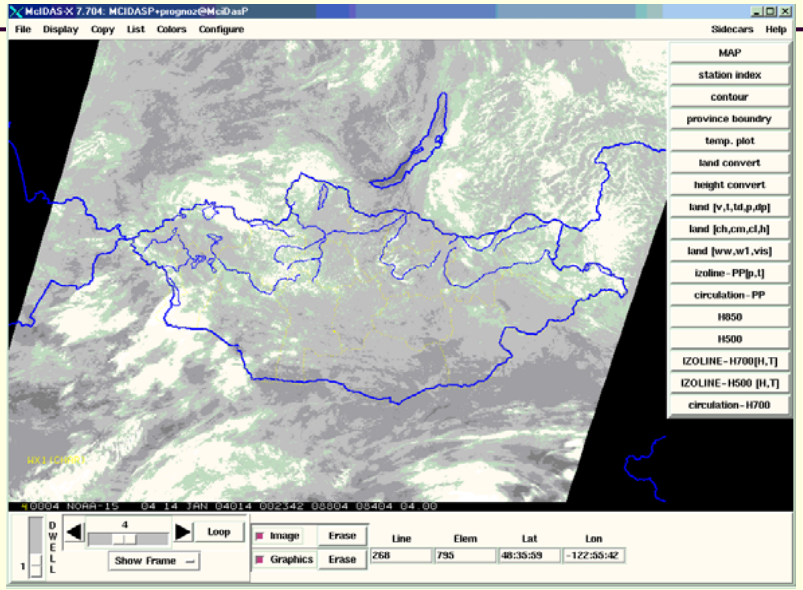
LOCATION OF THE SOLAR RADIATION STATIONS, 19

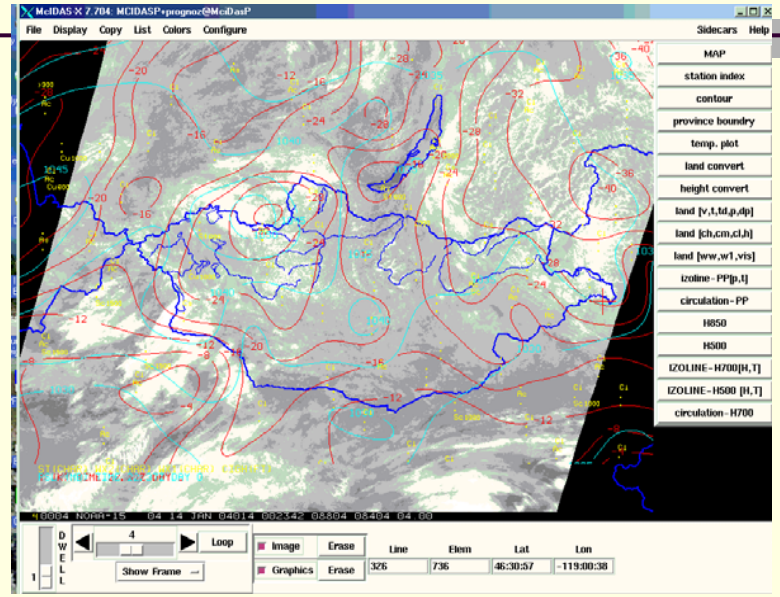


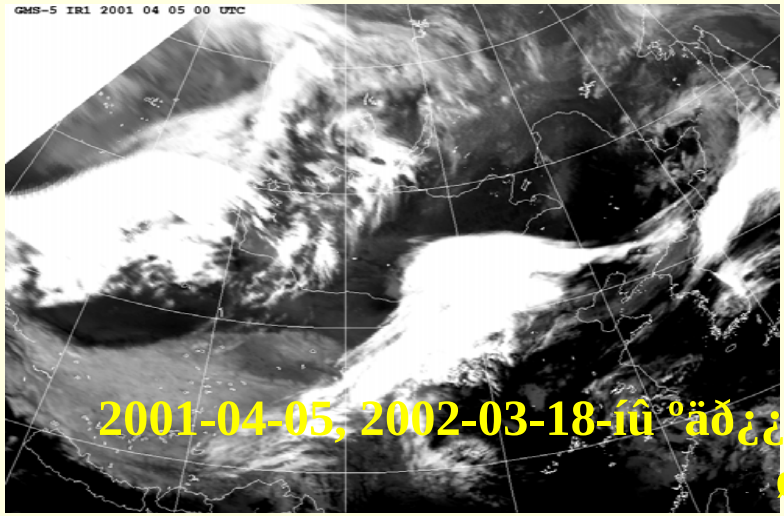
LOCATION OF THE AEROLOGICAL STATIONS, 7

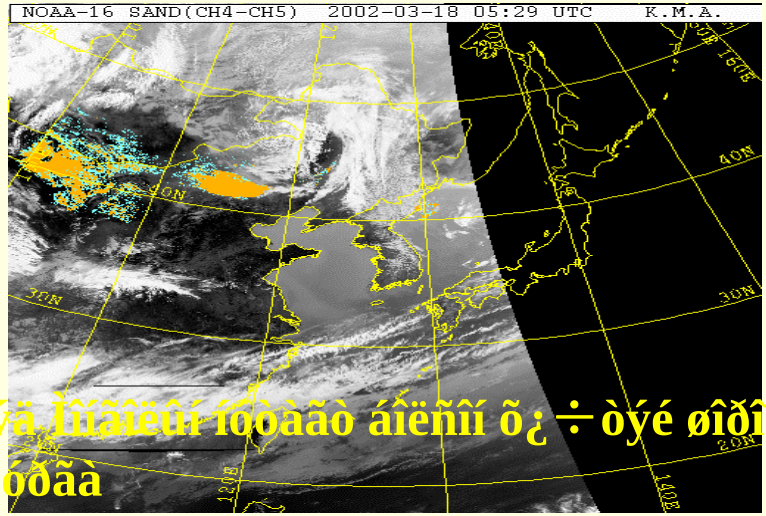


NOAA-16, MCIDAS, SINCE 1980-s









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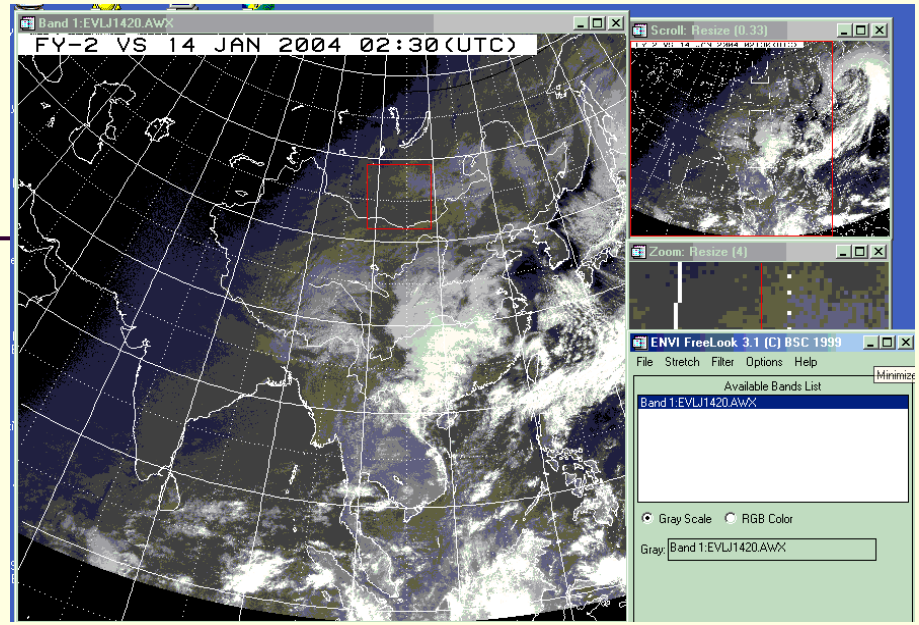
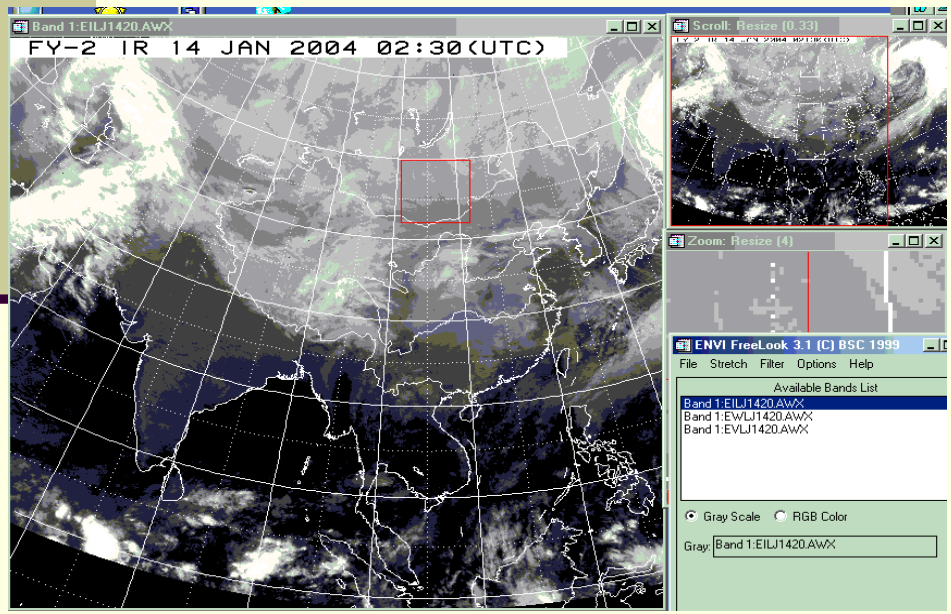
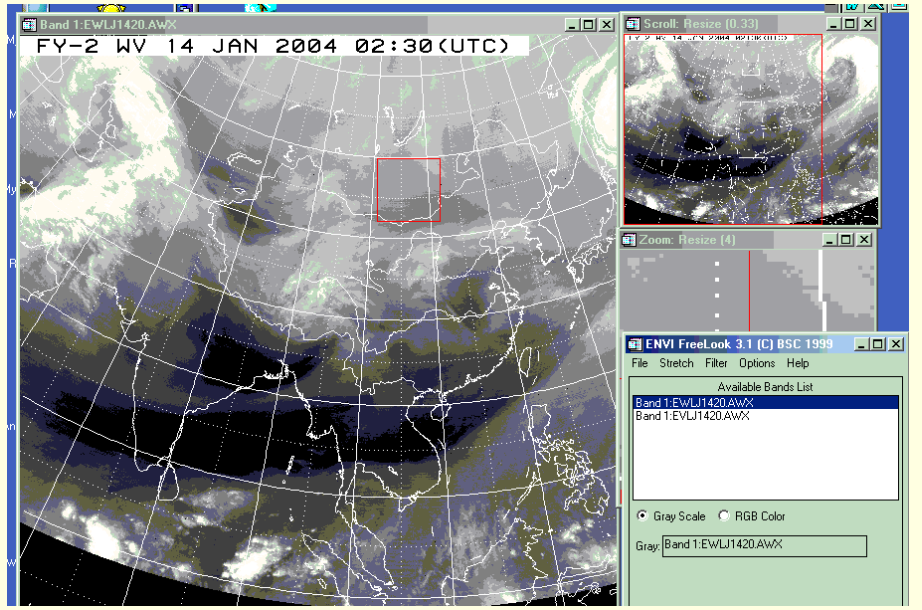
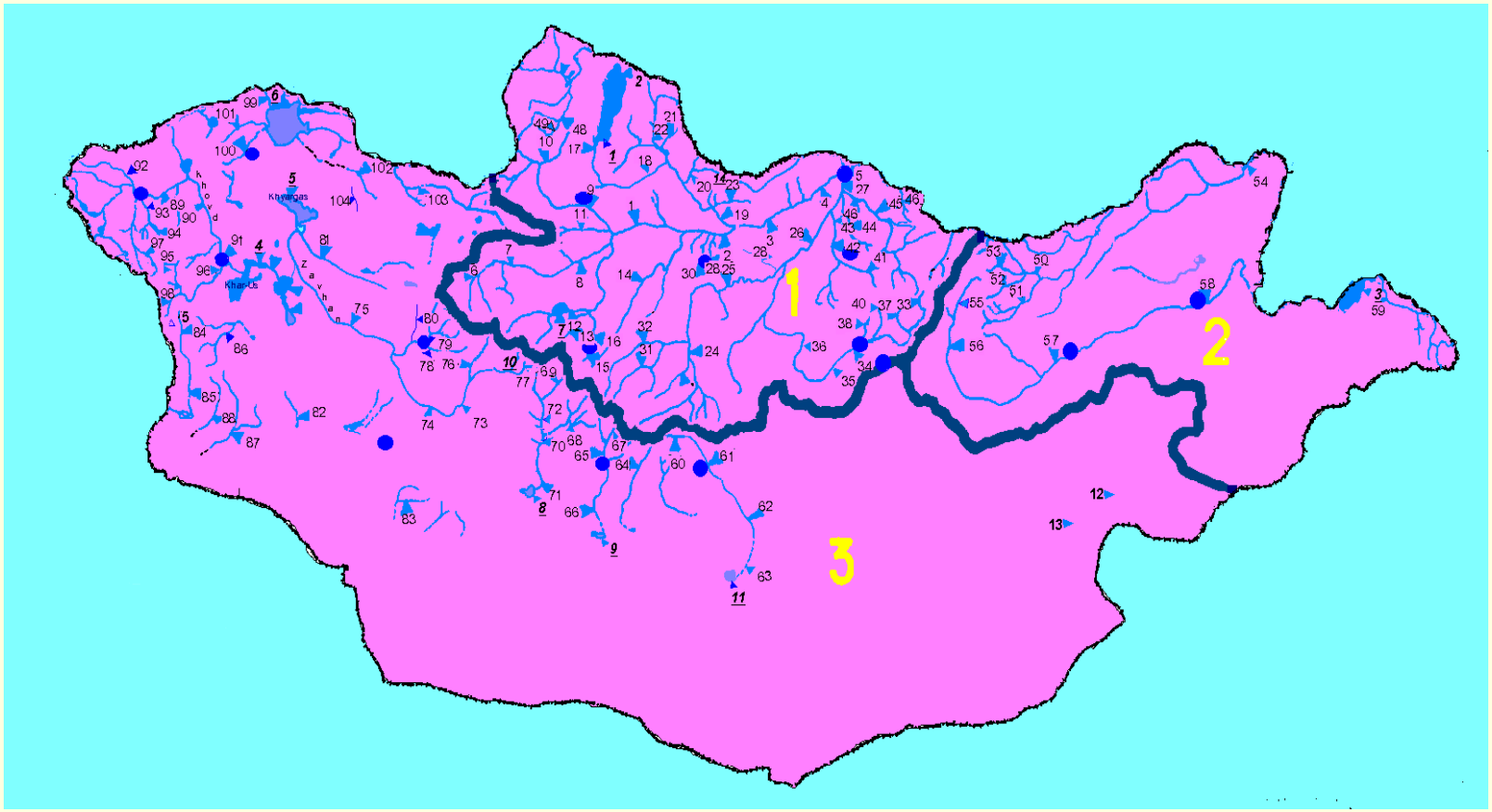
SINCE NOVEMBER, 2003







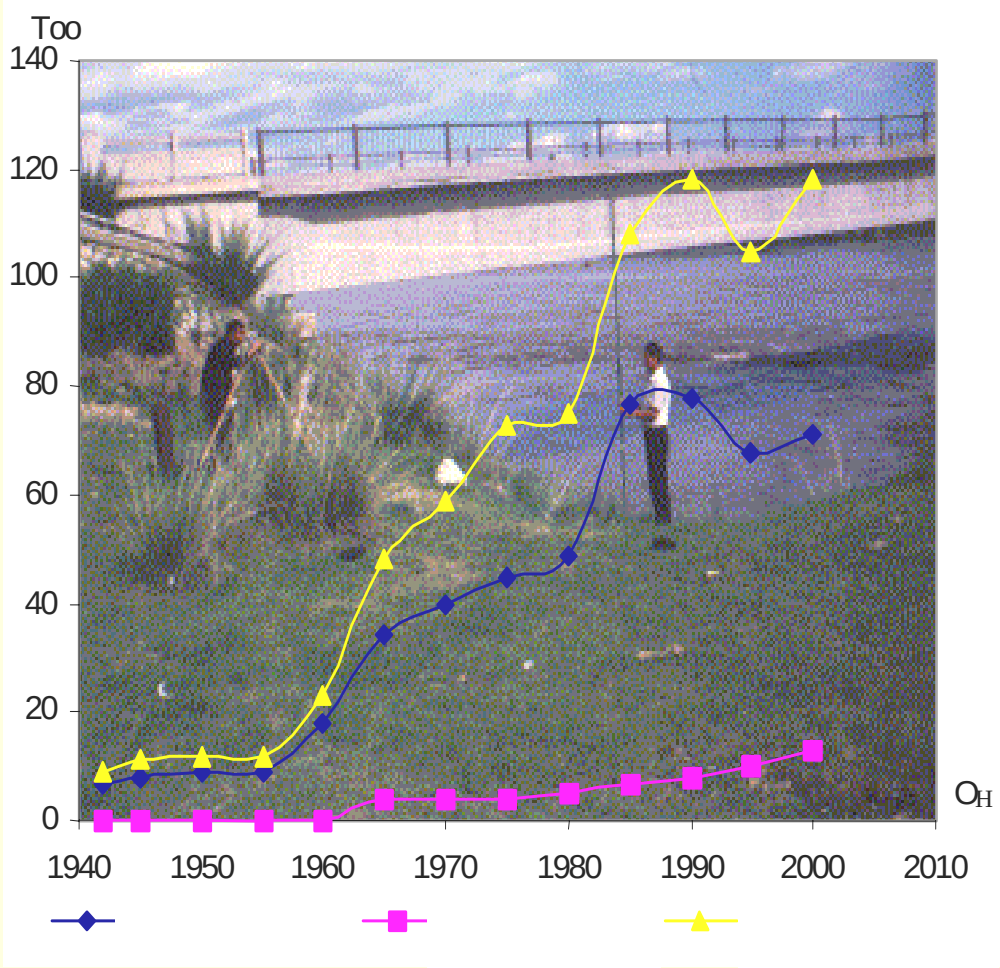
LOCATION OF THE HYDROLOGICAL POSTS, 120



HYDROLOGICAL POST, KHOVD, BUYANT

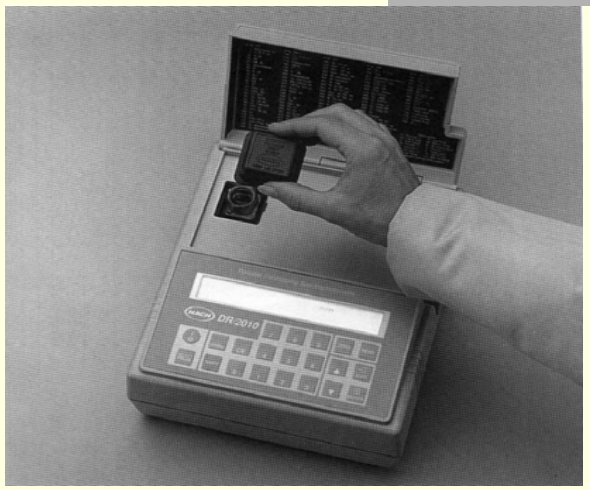
OBSERVATIONS

- Hydrometric

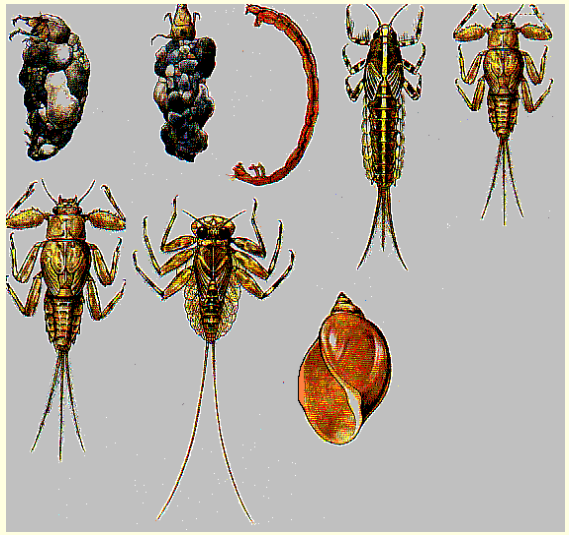


HYDROLOGICAL OBSERVATIONS

- Hydrochemical

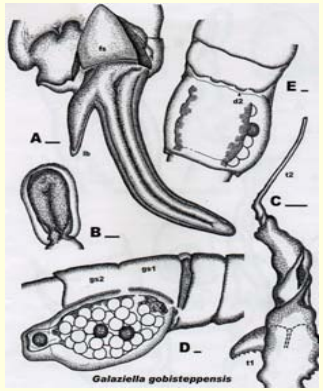


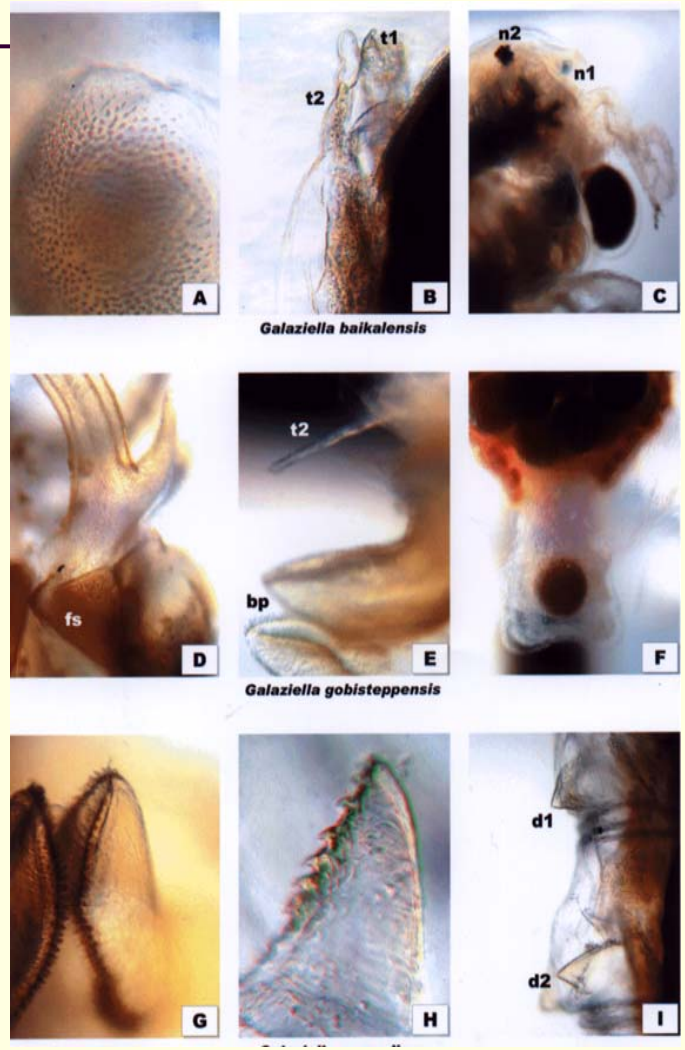
- Hydrobiological



LAKE ULAANDARVAGAI (46” 03'N, 103” 53'E), 1500 ì, pH 9.0, SQUARE 5,000 ì^2, DEPTH 20 ñì

<u>Anostraca G.O. Sars,1867 áàã</u>
Îâîã: Chirocephalidae Daday de Dees, 1910
Äýä îâîã: Chirocephalinae Daday de Dees, 1910
Òºðºë: Galaziella, 1820**
Ç¿éë: Galaziella gobisteppensis, Naganawa and Zagas 2002



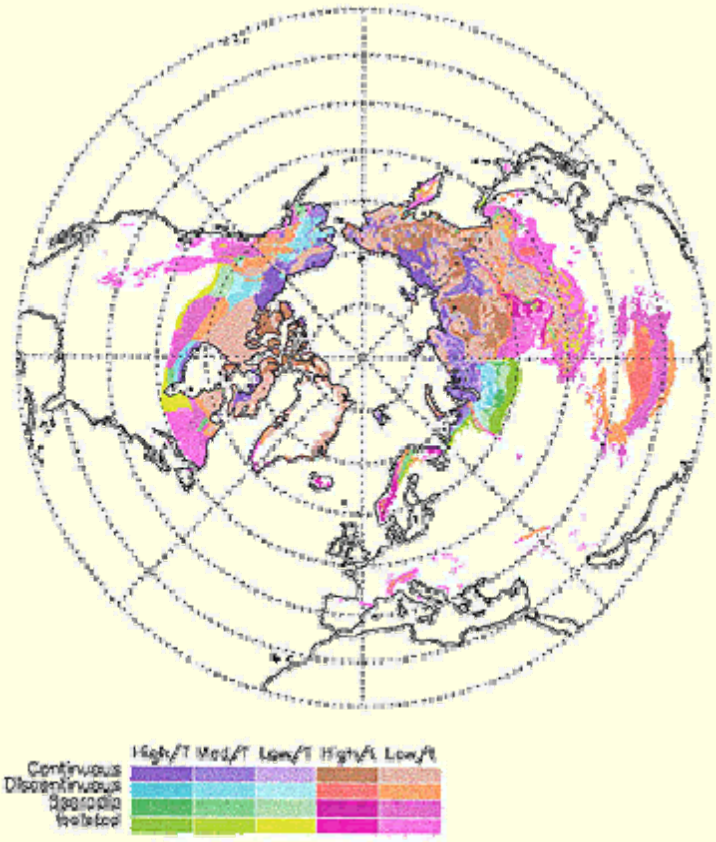


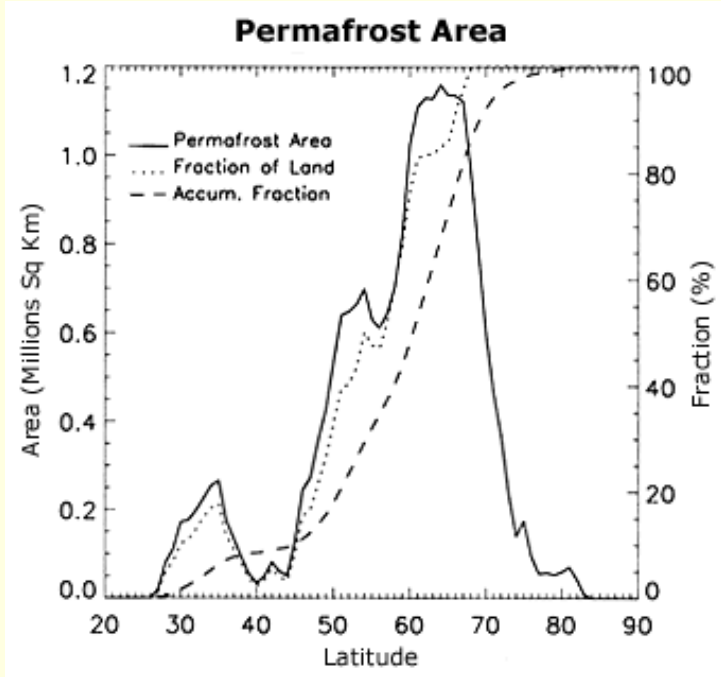
B.ZAGAS

RESEARCH TOPICS

- Surface water
- Groundwater
- Glaciers
- Permafrost
- Precipitation
- Soil moisture

PERMAFROST 23.9%, 22.79 mln êì/êâ (Zhang, T., Roger G. Barry, K. Knowles, J. A. Heginbottom, and J. Brown. 1999)



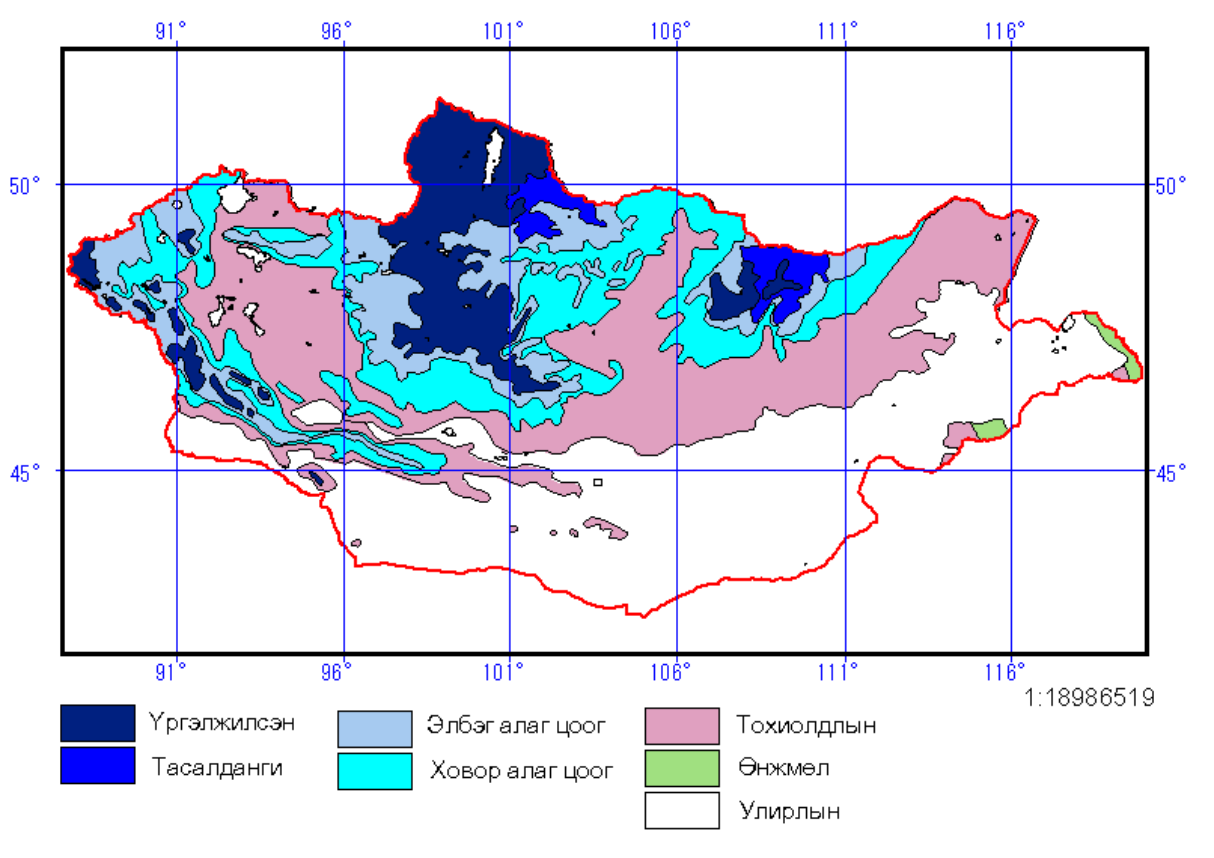


/Tingjun Zhang, National Snow and Ice Data Center, University of Colorado, Boulder/

PERMAFROST IN MONGOLIA,

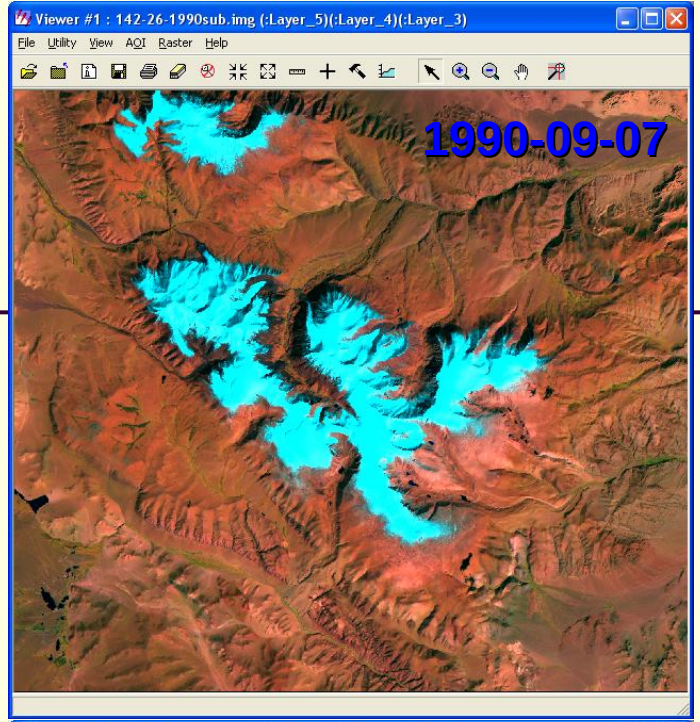
KHENTII, KHANGAI, ALTAI MOUNTAINS

（976.500 square km, 63%）



1971,
Mongolian-
Russian scientists,
1:1500000,

Ýðãýëæèëñýí	9.4
Òàñàëäàíãè	1.8
Ýëáýãàëàãöîîã	10.2
Õîâîðàëàãöîîã	12.2
Ôîõèîëäëûí	29.4
Íèéò	63
Óëèðëûí	37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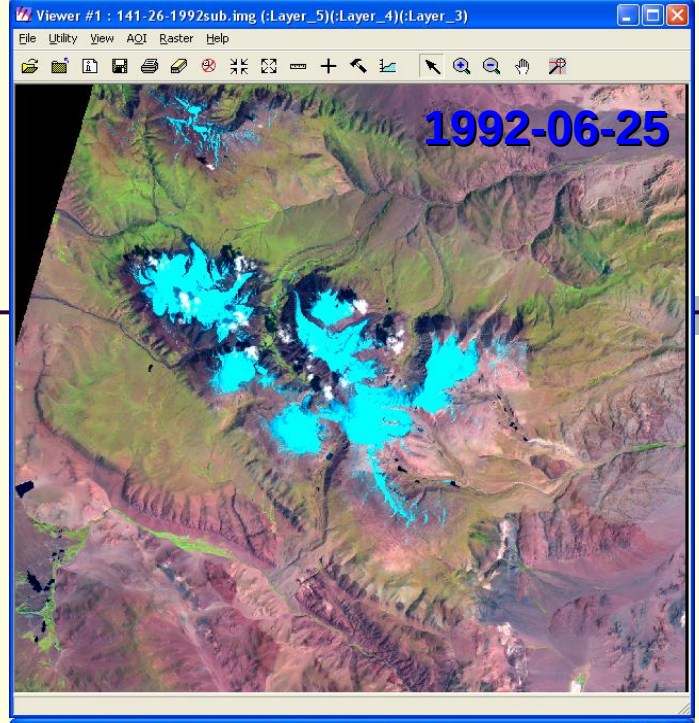
File Utility View AOI Raster Help
1990-09-07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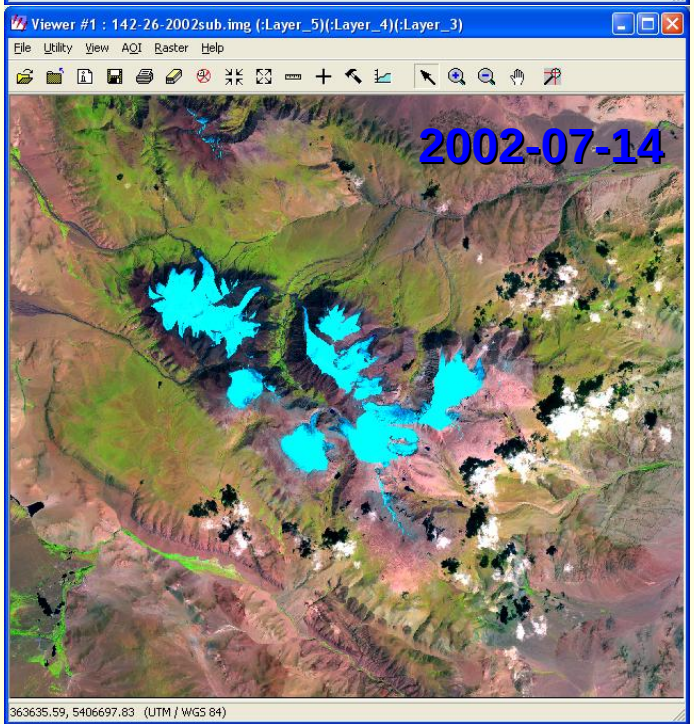
File Utility View AOI Raster Help
1992-06-25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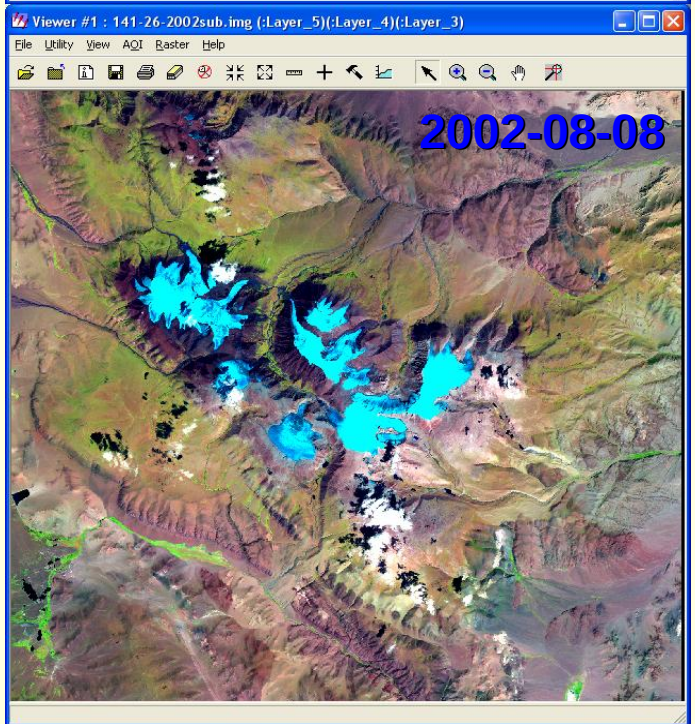
File Utility View AOI Raster Help
2002-07-14
363635.59, 5406697.83 (UTM / WGS 84)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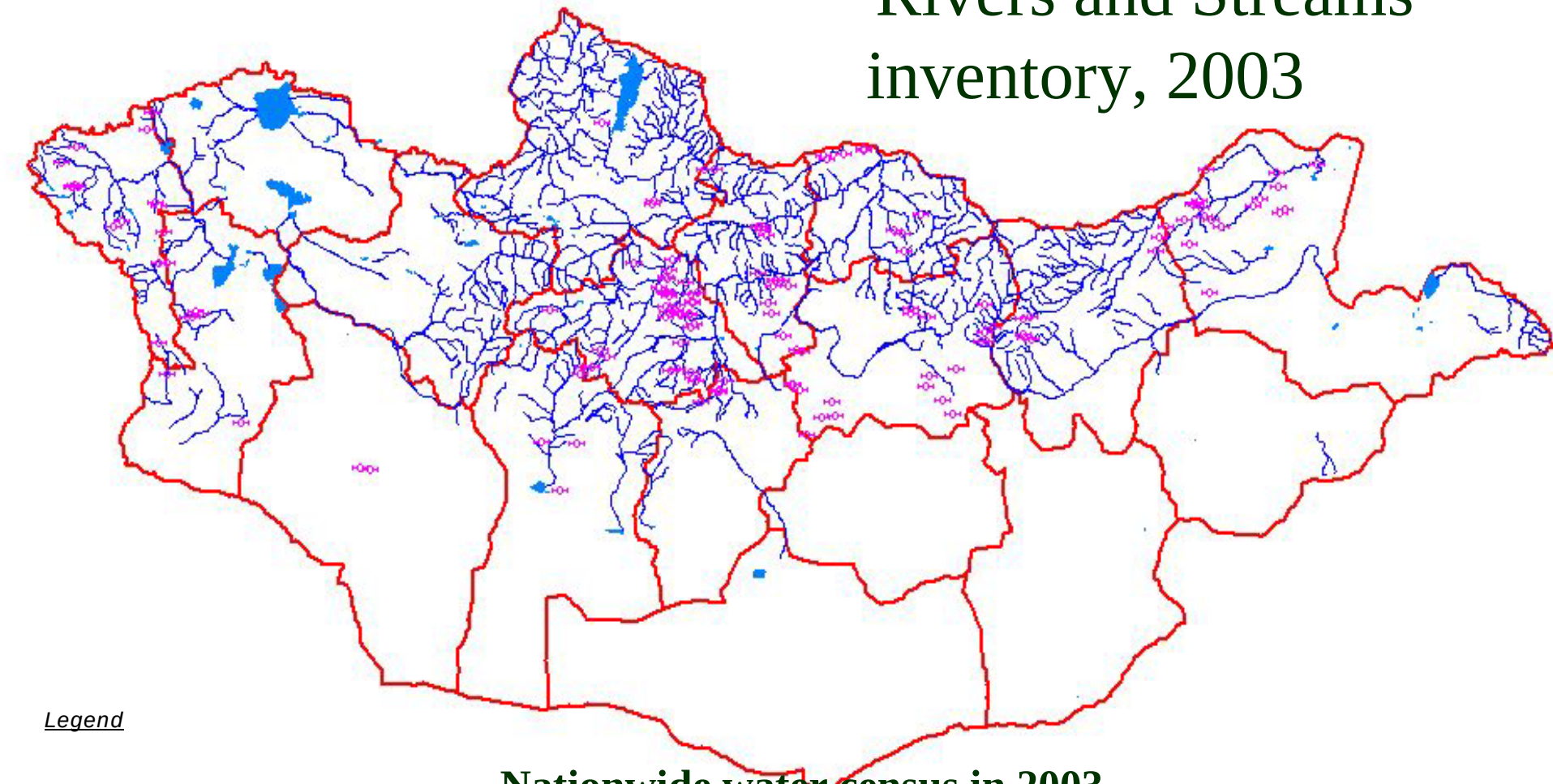
Rivers and Streams inventory, 2003



Nationwide water census in 2003

- 334 soums of 21 aimag provinces were covered

- 5,153 rivers and streams have been counted, of which 573 dried up;

- 9,582 springs counted, of which 1,158 dried up, and

- 3,854 lakes counted, of which 573 dried up.

History of hydrological education

- Since 1950-s started in Russia, Sankt-Peterburg, Hydrological State University
  - Engineer, 5 years
  - Ph.D, 3 years
- Since 1990-s in Mongolia, Department of Hydrometeorology and ecology, National University of Mongolia
  - Bachelor, 4 years
  - Master, 2 years
  - Ph.D, 3 years

Human resources in hydrology

- Researchers
  - 20 in IMH
  - In other institutions of Mongolia
  - 30 at aimag level
- Observers
  - 100 at sum level (village)
  - 30 at aimag level (province)
- Students

Problems

- Different level
- Communication (language)
- Instruments
- Technical facility, PC etc
- Methodology
- Methods for data processing and etc
- Software and programs

Needs

- Education
- Hydrological knowledge
- Understanding hydrology
- Skills
- Experiences

Conclusion

- Human resources development in developing countries is needed
  - Training is necessary
  - Have to do observations and data processing together in the beginning
  - Learning technology, methodology, models, research methods and etc
  - Improve observations and data quality
  - Sharing data, information, research outputs and etc
- Working together and getting much more results in hydrology

Thank you for your attention