

APLIKACE DPZ V GEOVĚDNÍCH DISCIPLÍNÁCH



<http://weather.msfc.nasa.gov/>

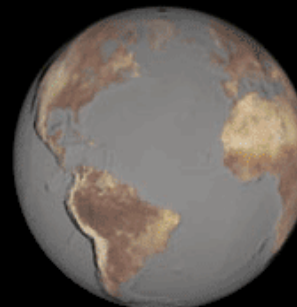
DPZ v geovědních disciplínách

1. DPZ ve fyzické geografii
2. DPZ v socioekonomické geografii
3. DPZ v kartografii



FYZICKOGEOGRAFICKÁ SFÉRA

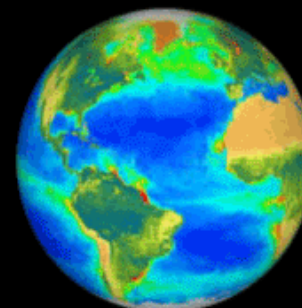
- litosféra a pedosféra
(geologie a geomorfologie)
- atmosféra
(klimatologie a meteorologie)
- hydrosféra
(hydrografie a oceánografie)
- biosféra (biogeografie aj.)
- kryosféra (glaciologie)



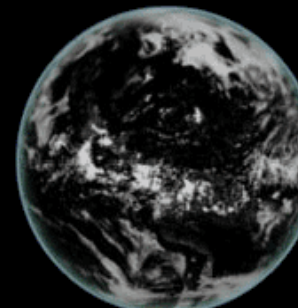
Geosphere



Hydrosphere

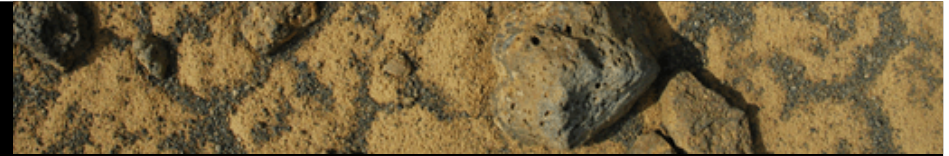


Biosphere



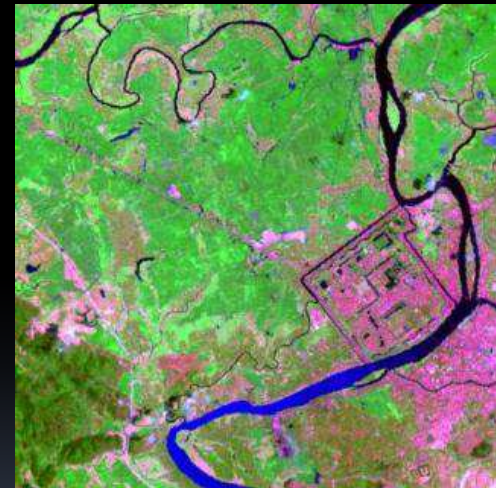
Atmosphere

1. LITOSFÉRA a PEDOSFÉRA



Příklady využití:

- monitoring horotvorné a erozní činnosti
- DPZ v geomorfologii
- 3D mapování reliéfu
- mapování seismické a vulkanické aktivity
- hydropedologické modelování
- mapování půdních charakteristik



Landsat ETM+ bands
7,4,2 – Moisture
content in
vegetation and soils,
geological mapping



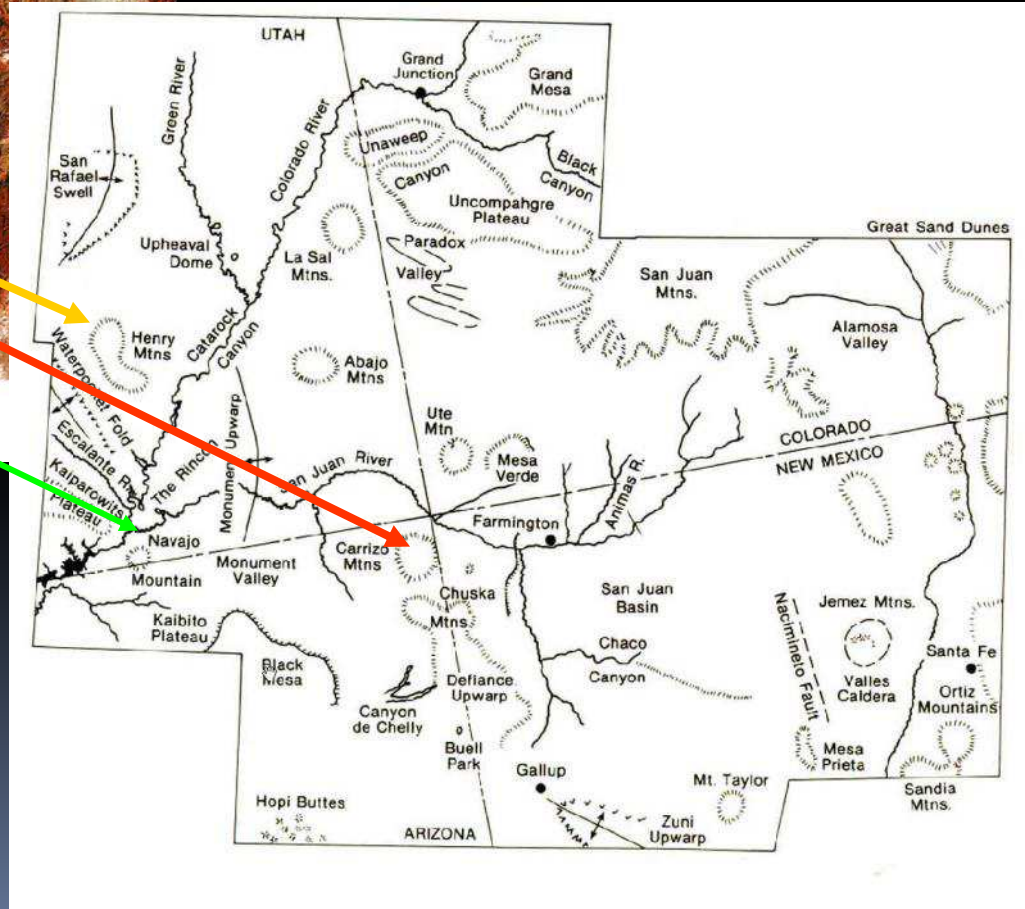
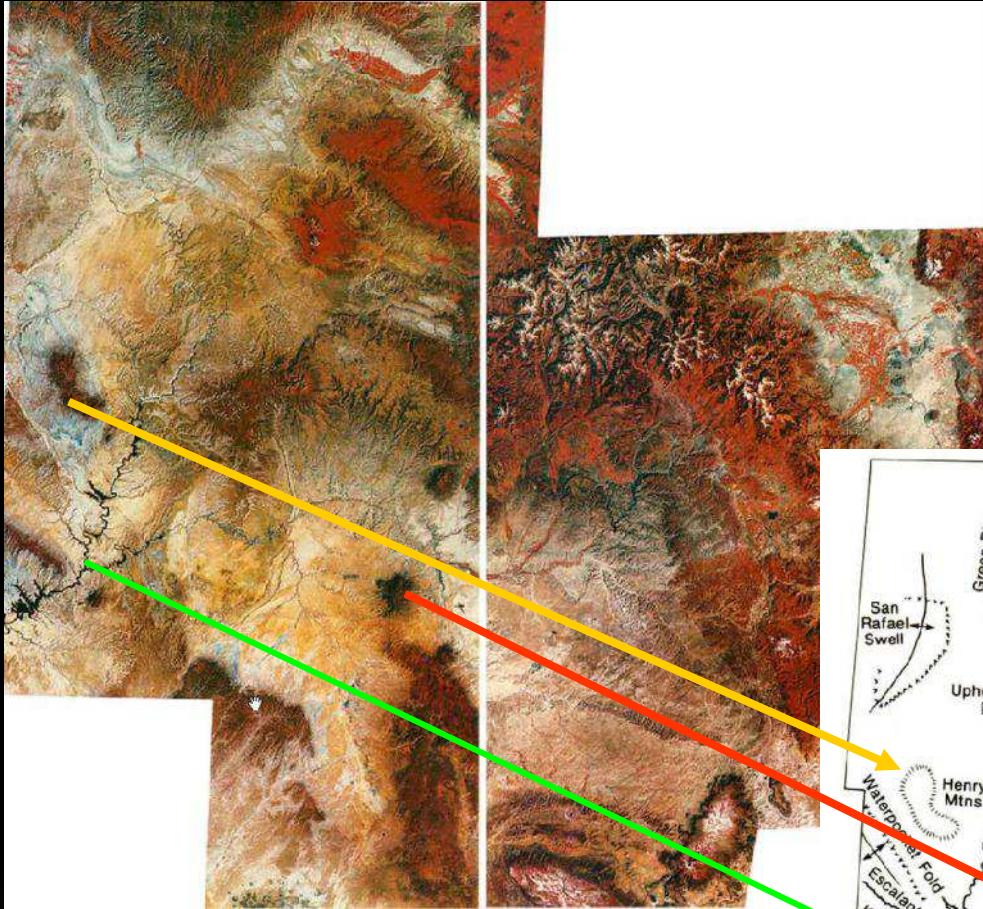
Landsat ETM+ bands
4,5,3 – Land/water
boundary, Vegetation
type and condition,
soil moisture

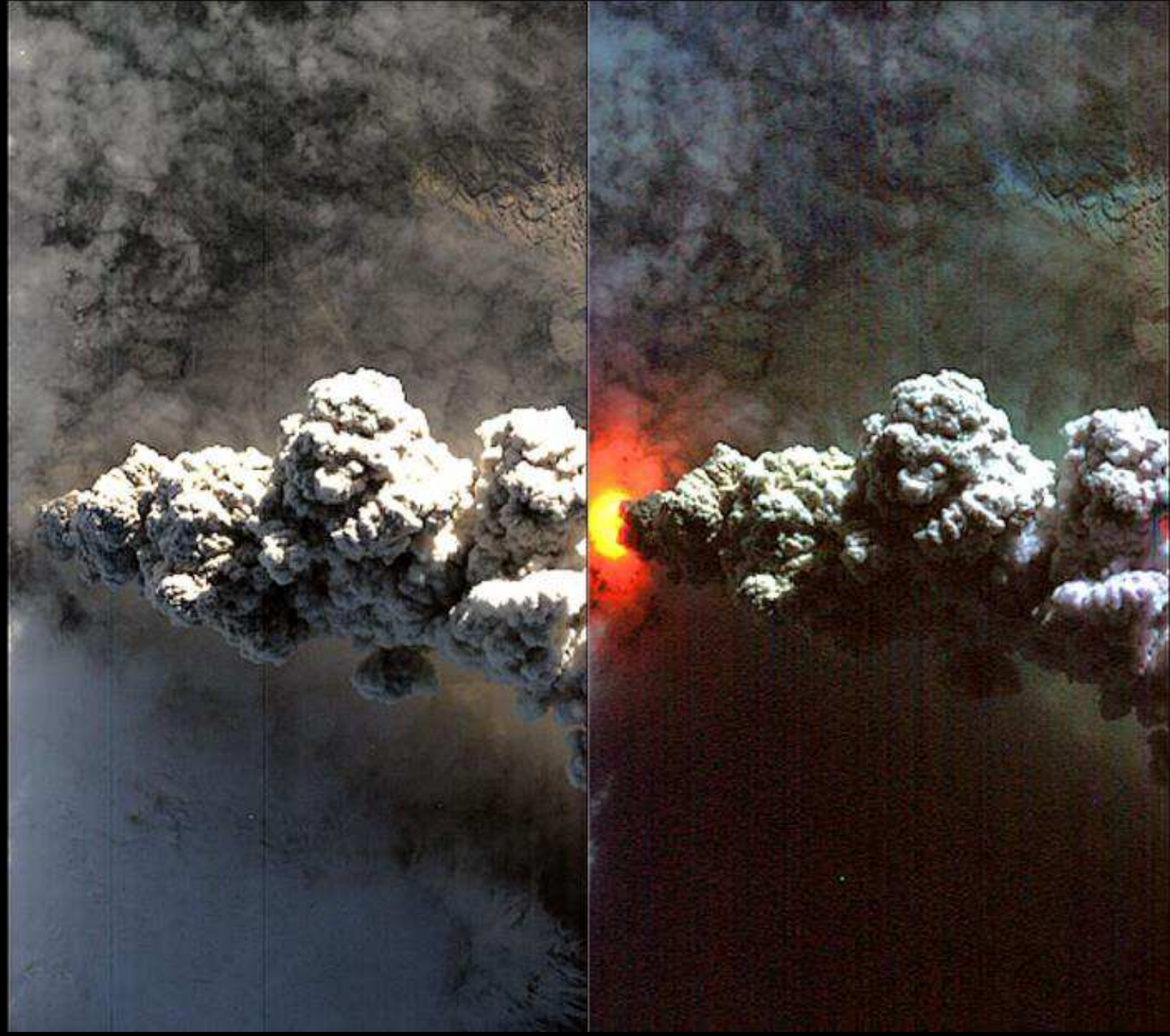
1. LITOSFÉRA a PEDOSFÉRA



The Land Processes Distributed Active Archive Center (LP DAAC) is a component of NASA's Earth Observing System (EOS) Data and Information System (EOSDIS).

<https://lpdaac.usgs.gov/>

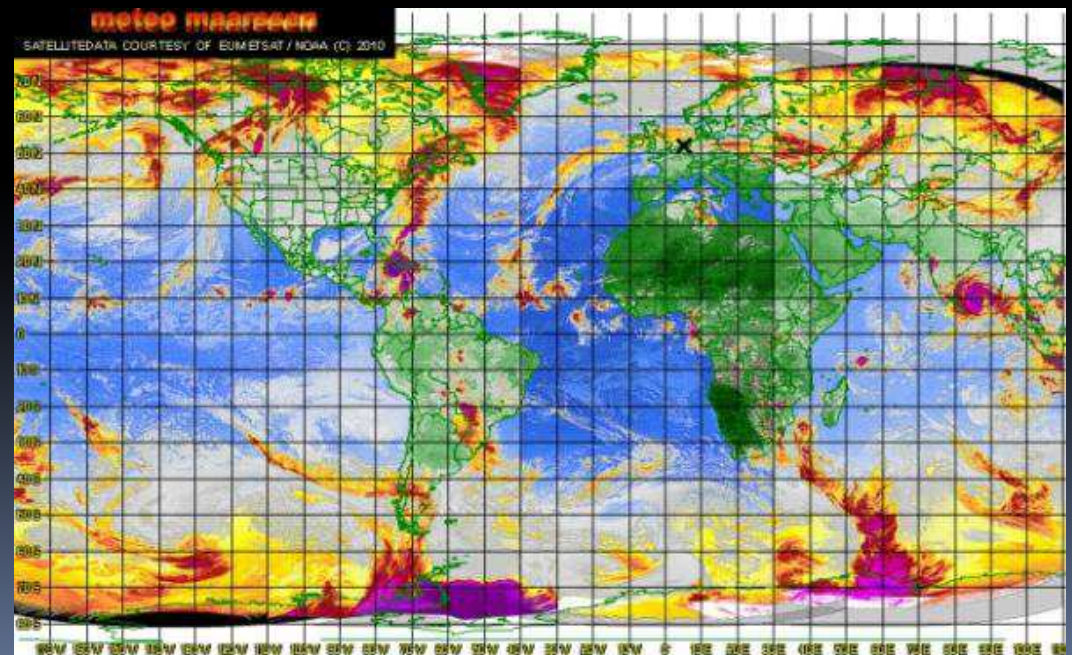


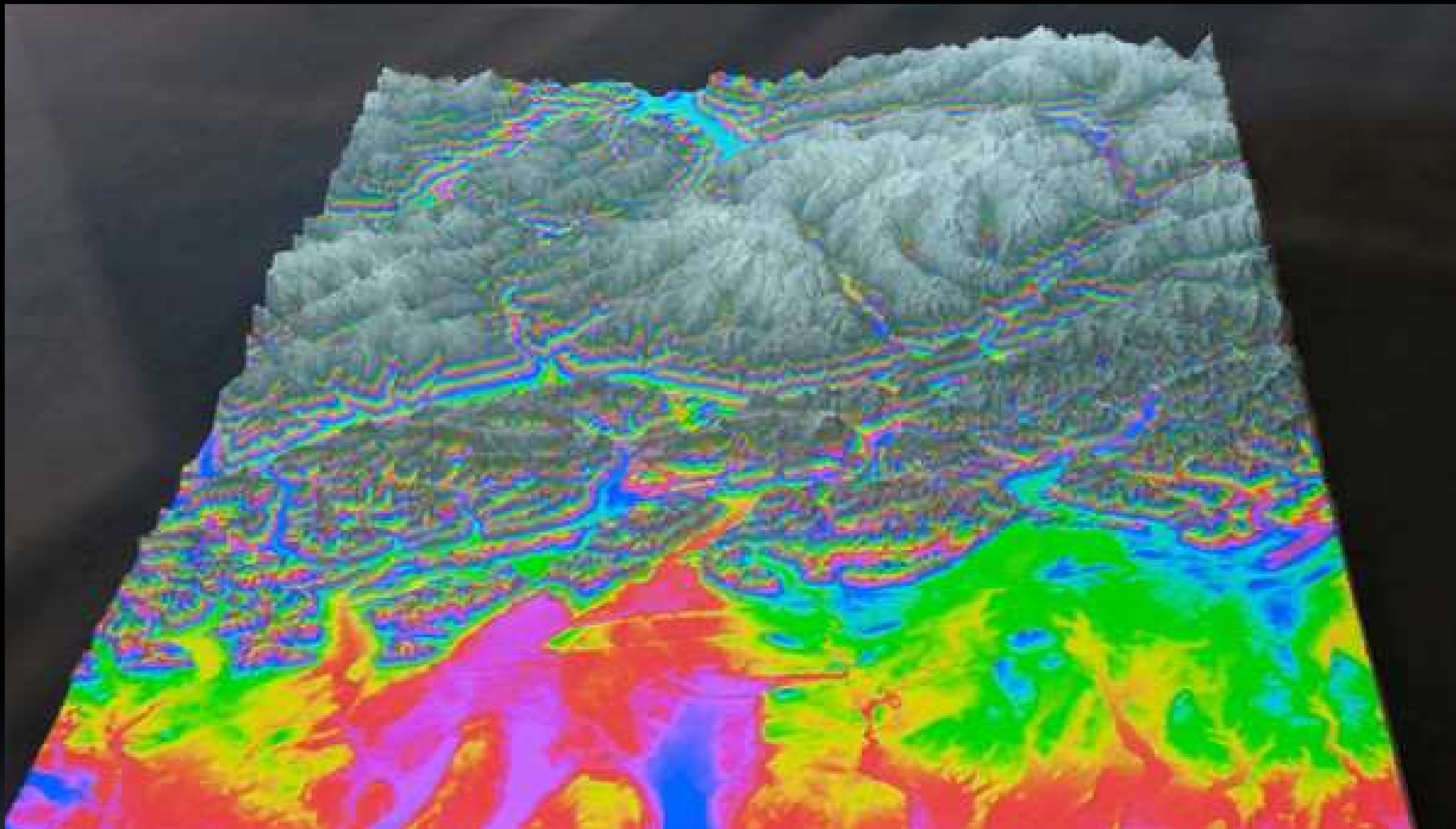


2. ATMOSFÉRA

Příklady využití:

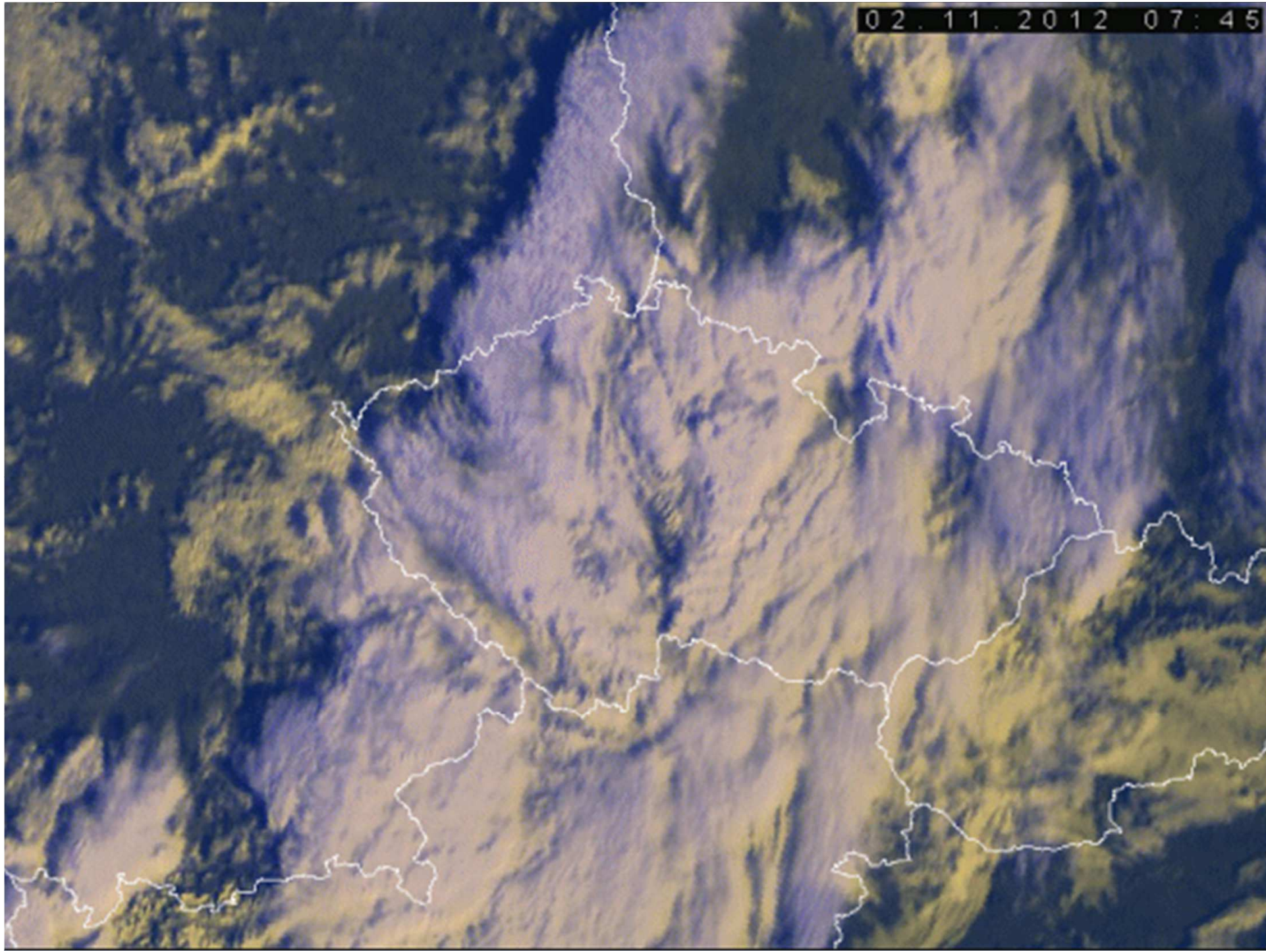
- monitoring aerosolů v atmosféře (Terra-MISR)
- monitoring extrémních projevů počasí
- monitoring přízemního CO₂ a ozonu (Terra – MOPITT)
- snímání oblačnosti v různých spektrálních pásmech (METEOSAT)
- výzkum ENSO
- radiční bilance (Terra – CERES)
- monitoring životního prostředí





Dopad klimatických změn v Alpách (DLR)

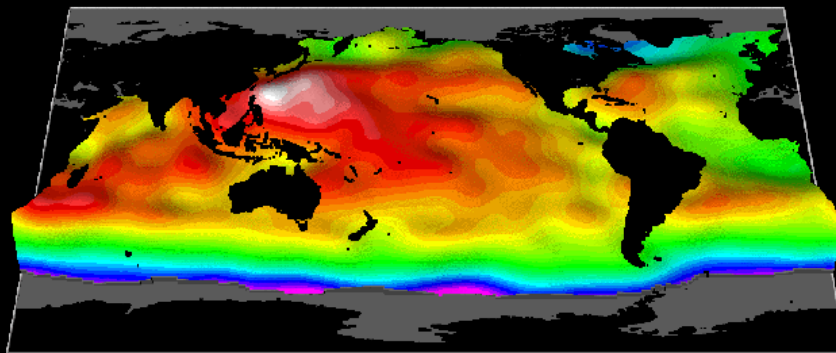
02.11.2012 07:45



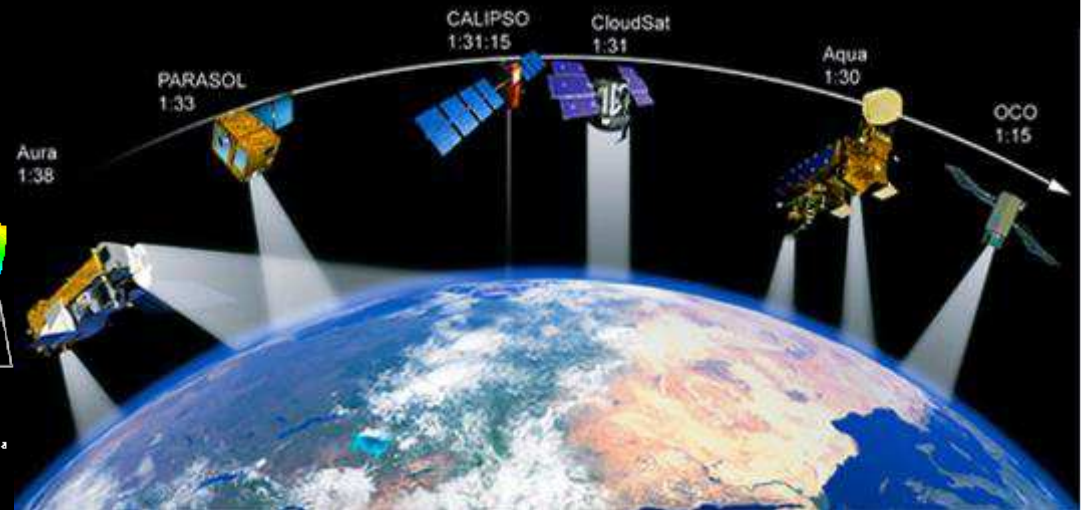
3. HYDROSFÉRA



- **Příklady využití:**
 - průzkum teploty a salinity oceánů (Aqua, CALIPSO)
 - monitoring extrémních hydrologických jevů (povodně, tsunami)
 - pohyby vodních mas (mořské proudy)
 - dynamika ledovců (pohyb, změna kvantity)
 - mapování močálů
 - mapování povodí, modelování odtoku
 - odhad půdní vlhkosti, výšky sněhu



120 80 40 0 40 80 No Valid Data
Ocean Dynamic Topography (cm) Oct 3-12, 1992

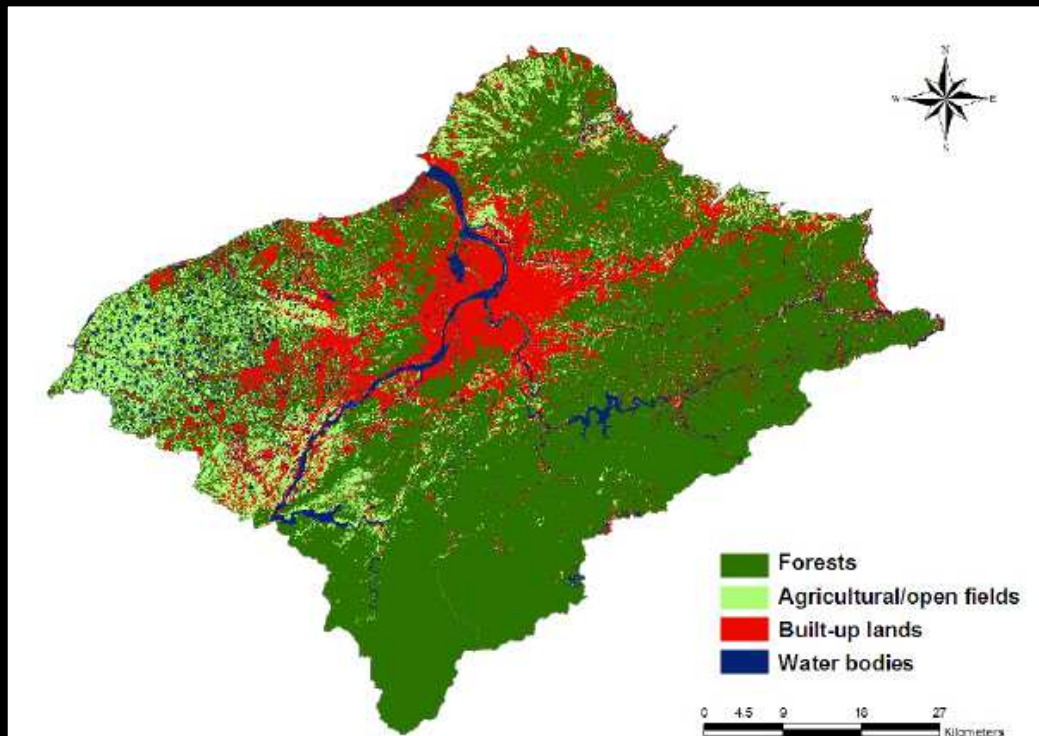


3. BIOSFÉRA



Příklady využití:

- mapování Land-use a Land-cover (SPOT)
- monitoring biodiverzity (Terra-MODIS)
- monitoring ekosystémů, biotopů...
- identifikace druhů a typů vegetace



KRYOSFÉRA

<http://nsidc.org/cryosphere/seaice/index.html>

ice concentration

ice type / age / motion

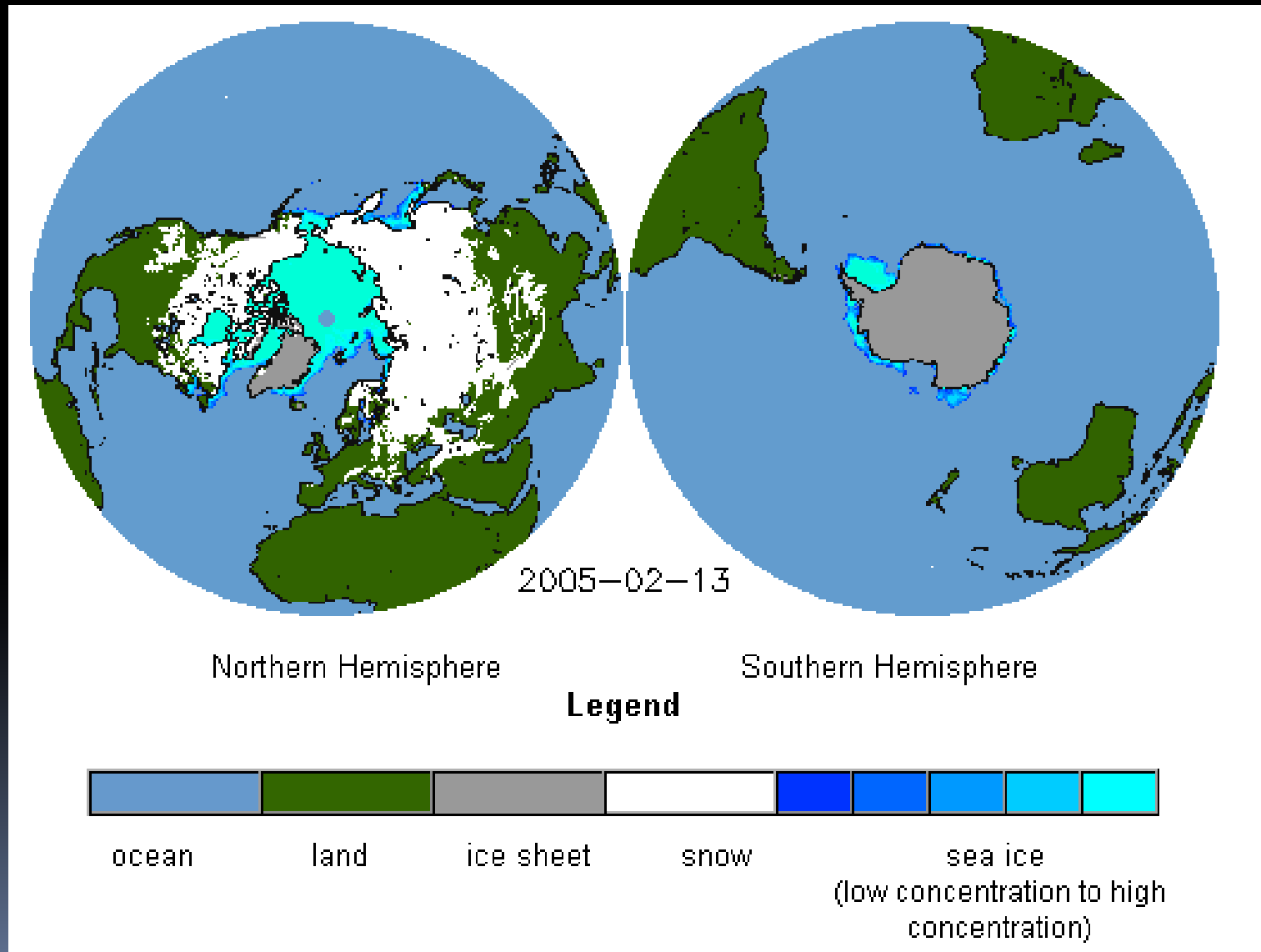
iceberg detection and tracking

tactical identification of leads: navigation: safe shipping routes/rescue

ice condition (state of decay)

historical ice and iceberg conditions and dynamics for planning purposes

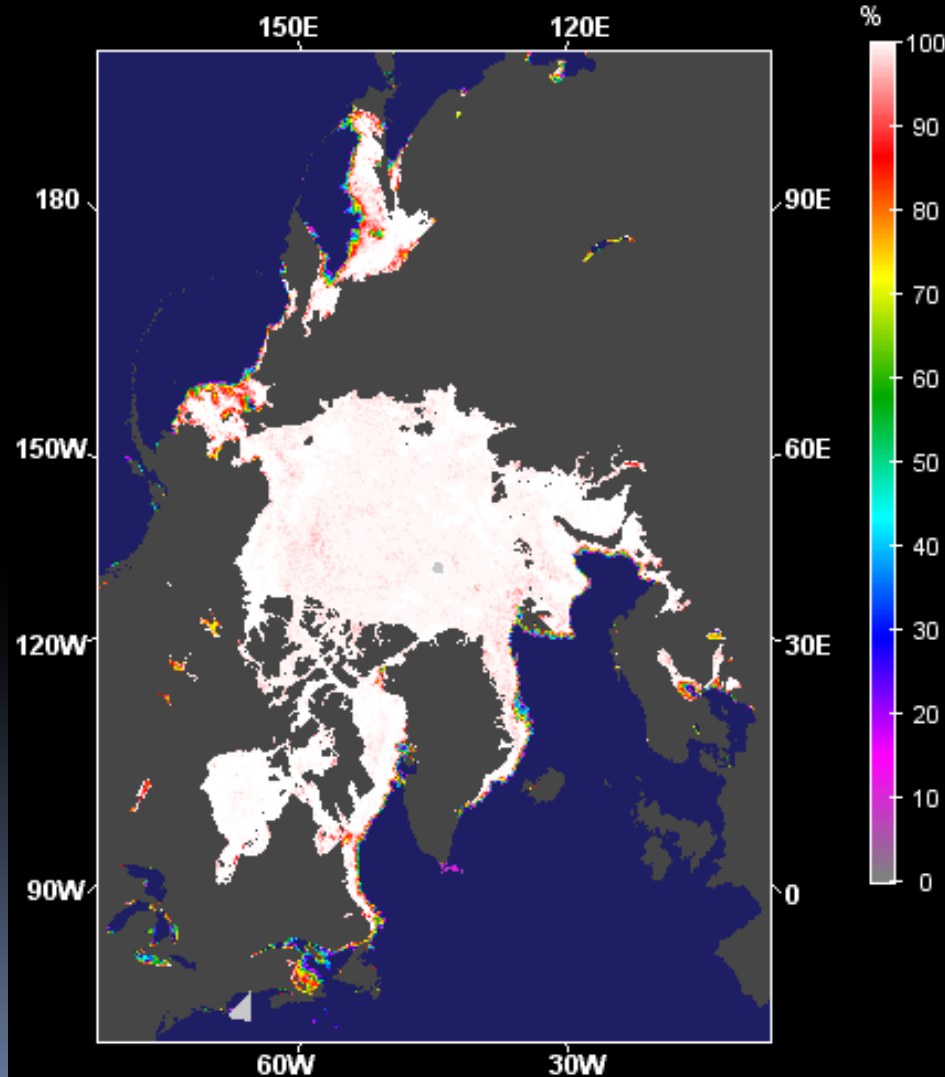
Snow Extent and Sea Ice Concentration



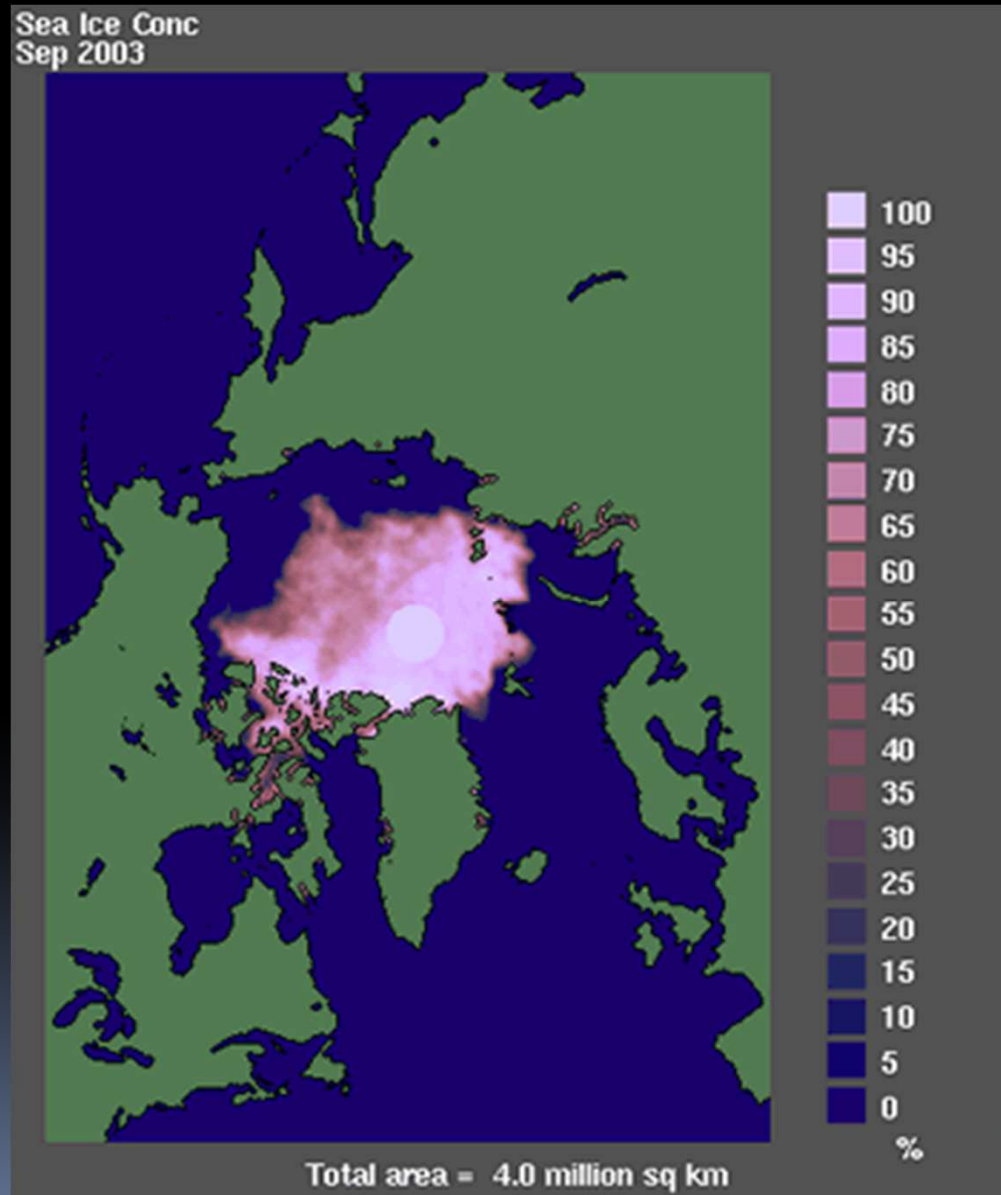
Arctic Ice Concentration



Aqua AMSR-E - NH 12.5km Sea Ice Con.
All Passes - Daily
Date: 2003-02-05 (036)



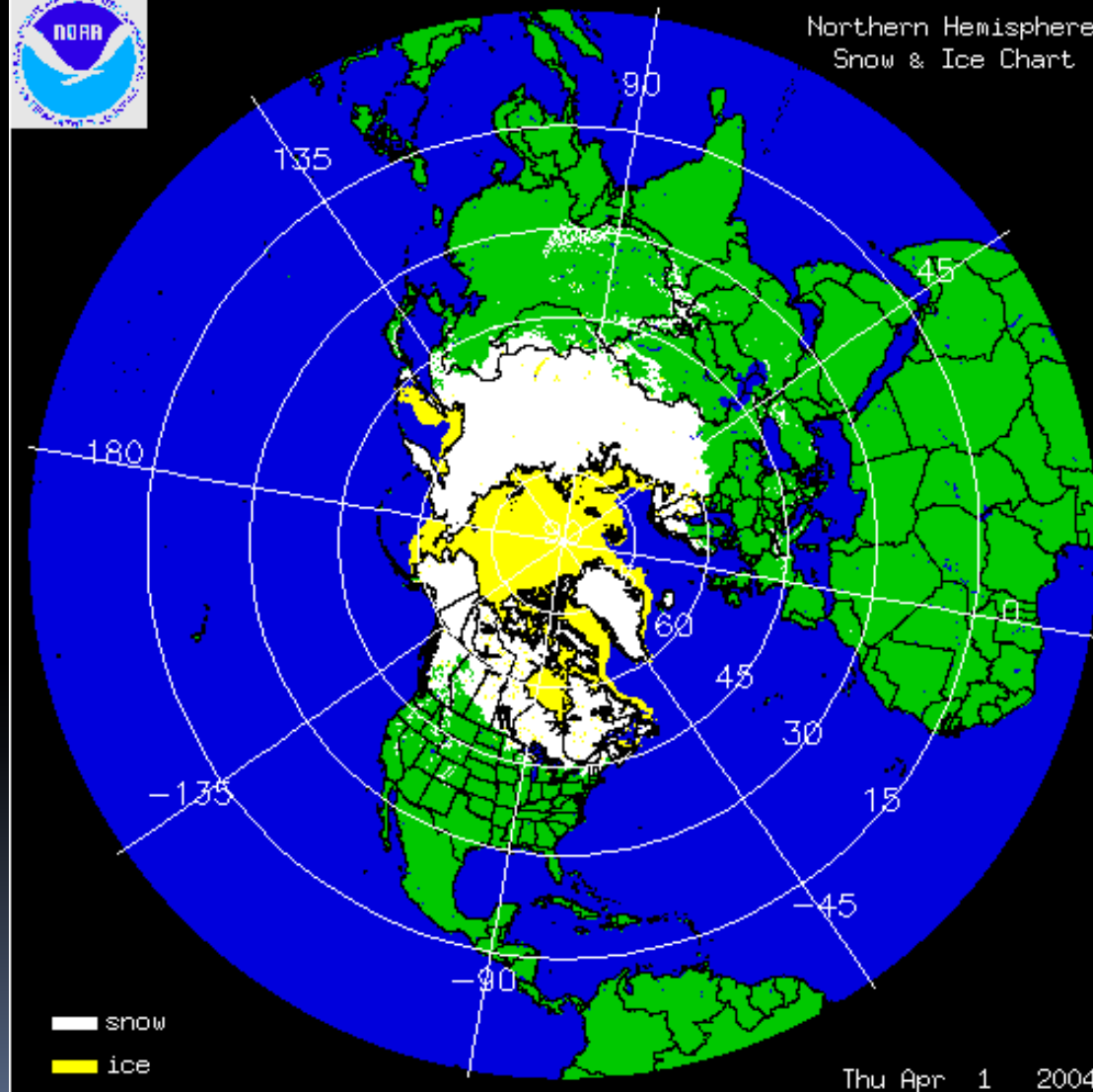
Average Ice Concentration



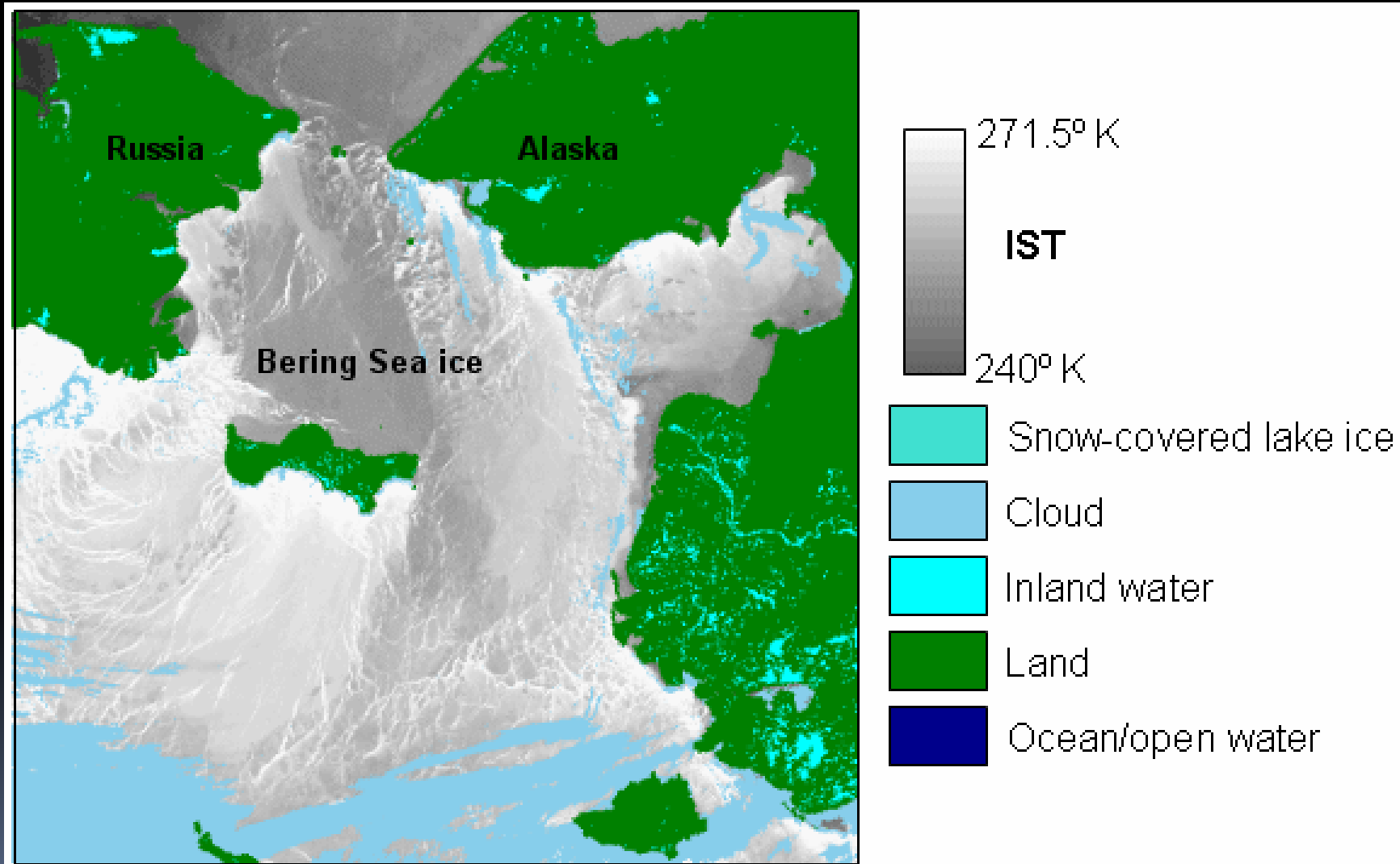
Northern Hemisphere Snow and Ice Maps



Northern Hemisphere
Snow & Ice Chart



Ice Surface Temperature



**DÁLKOVÝ PRŮZKUM ZEMĚ V SOCIOEKONOMICKÉ a
HUMÁNNÍ SFÉŘE**

<http://sedac.ciesin.columbia.edu/>

SEDAC

**(Socioeconomic Data and Applications Center),
is one of the Distributed Active Archive Centers
(DAACs)**

**in the Earth Observing System Data and Information
System (EOSDIS)
of the U.S. NASA.**

DATA SETS

- Agriculture
- Climate
- Conservation
- Framework Data
- Governance
- Hazards
- Health
- Infrastructure
- Land Use
- Marine and Coastal
- Population
- Poverty
- Remote Sensing
- Sustainability
- Urban
- Water

Population

SETTLEMENT POINTS

Albania GRUMP



Global Rural-Urban Mapping Project
 Settlement Points
 ● <50K
 ● 50K-500K
 ● 500K-1Million
 ● 1Million-5Million
 ● >5Million

Administrative Units
 National Boundaries



Settlement points with population estimates are used in GRUMP as a guide to reallocation of population from rural areas to urban extents defined by stable night-time lights. The level of detail available in the settlement points database varies by country.

Note: National boundaries are derived from the population grids and thus may appear coarse.



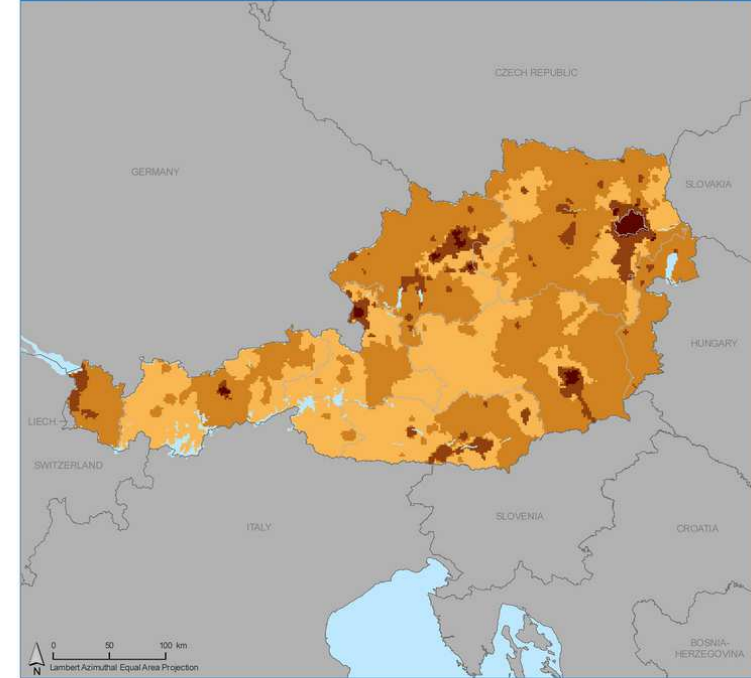
Copyright 2009, The Trustees of Columbia University in the City of New York, Center for International Earth Science Information Network (CIESIN), Columbia University, International Food Policy Research Institute (IFPRI), the World Bank, and Centro Internacional de Agricultura Tropical (CIAT). Global Rural-Urban Mapping Project (GRUMP), Population Density. Palisades, NY: CIESIN, Columbia University. Available at: <http://sedac.ciesin.columbia.edu/gwp/>



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POPULATION DENSITY, 2000

Austria GRUMP



Global Rural-Urban Mapping Project

Persons per km²
 0
 1 - 5
 6 - 25
 26 - 250
 251 - 1,000
 1,001 +

Boundaries
 Country
 Admin. 1



Population density measures the number of persons per square kilometer of land area. The data are gridded at a resolution of 30 arc-seconds.

Note: National boundaries are derived from the population grids and thus may appear coarse.



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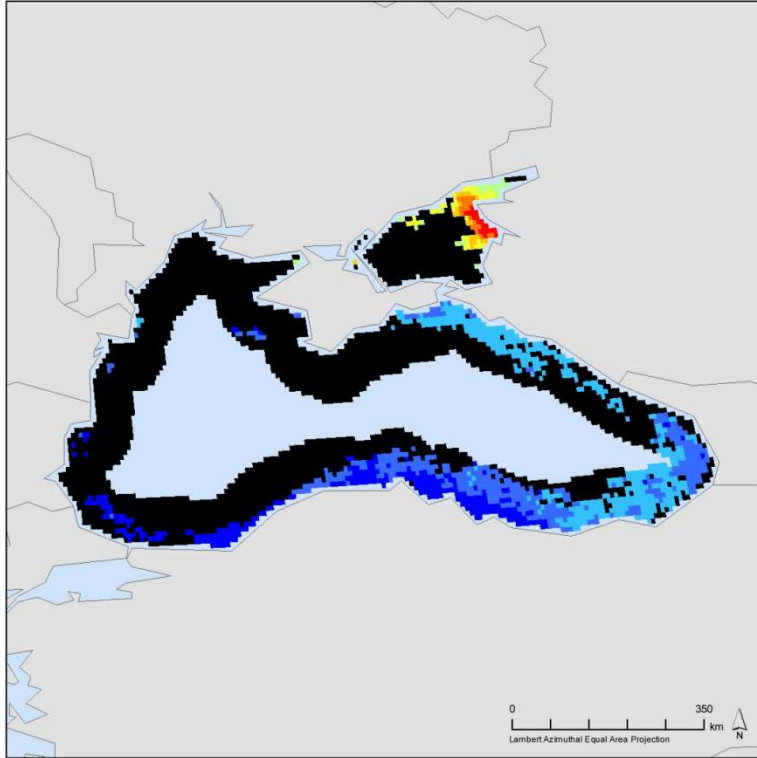


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Sustainability

Indicators of Coastal Water Quality

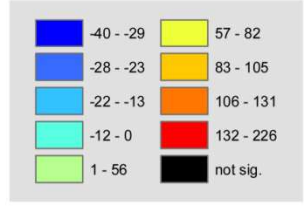
Black Sea



Percent Change, 1998 - 2007

Chlorophyll-a concentration

Values indicate the statistically significant percent change in chlorophyll-a concentrations in near coastal waters (10-100 km) from 1998-2007, derived from SeaWiFS level-3 annual composites.



© 2009, The Trustees of Columbia University in the City of New York. Source: Socioeconomic Data and Applications Center (SEDAC), based on SeaWiFS data from the Ocean Color Web at the Goddard Space Flight Center. Further documentation available at: <http://sedac.ciesm.columbia.edu/es/seaWiFS.html>



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1. DOPRAVA a SÍDLA

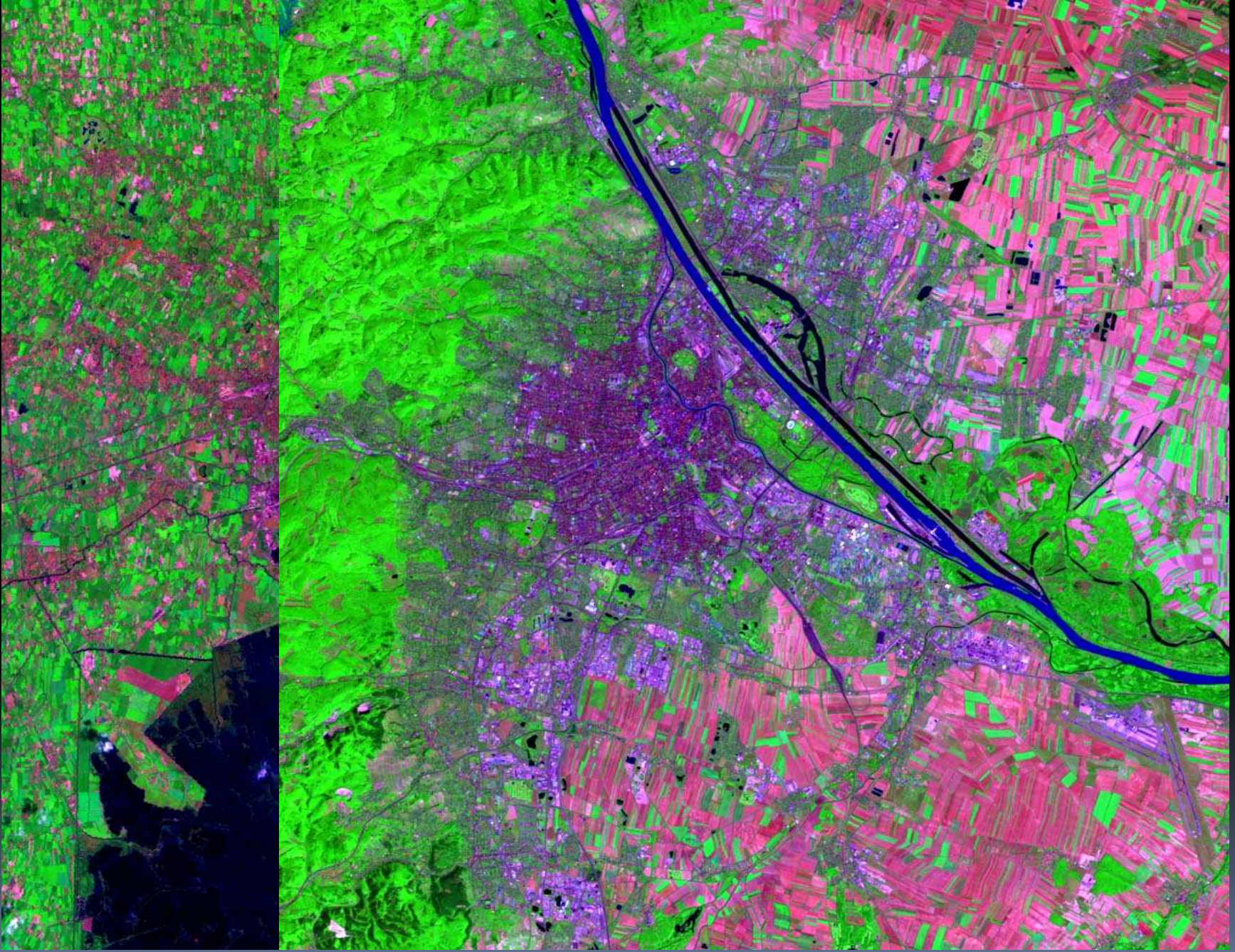
Příklady využití:

- mapování dopravních sítí
- monitoring dopravní situace (kolony,...)
- změna a charakter zástavby



Haifa, Izrael

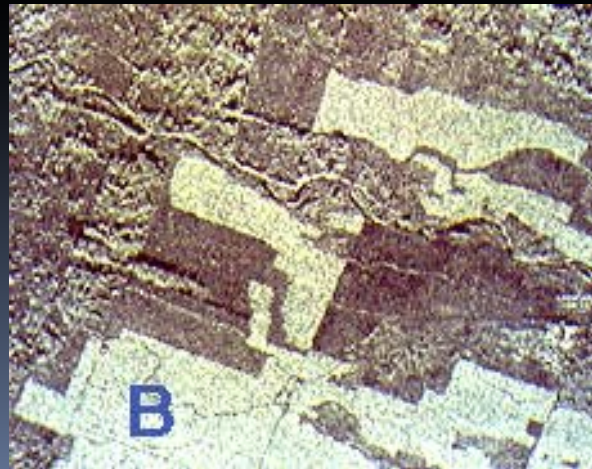
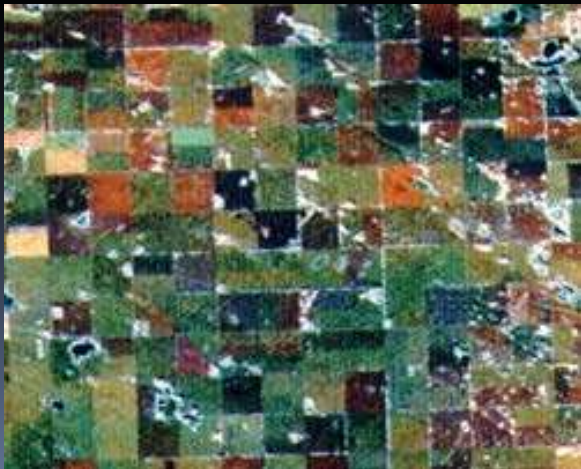


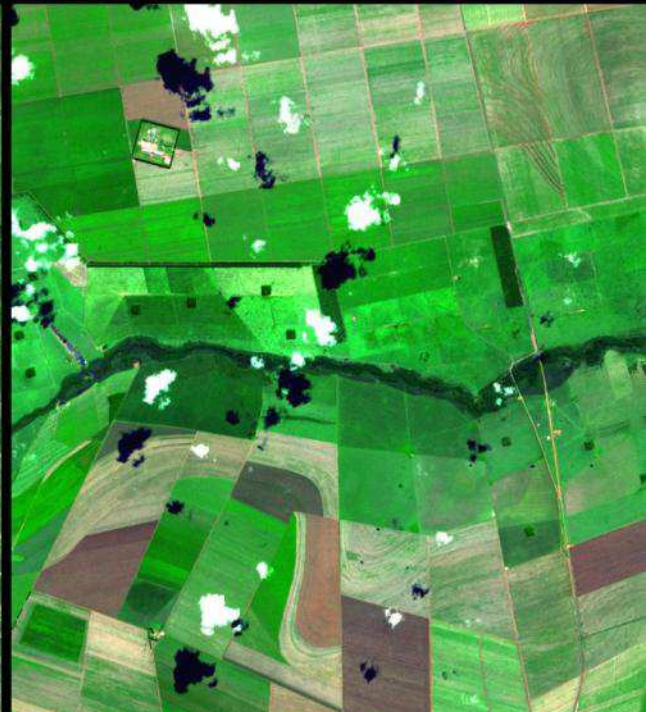
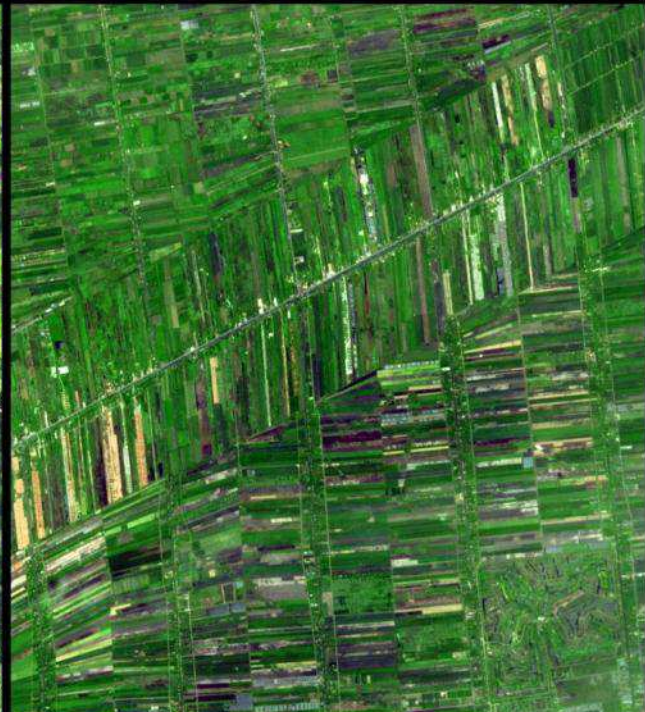
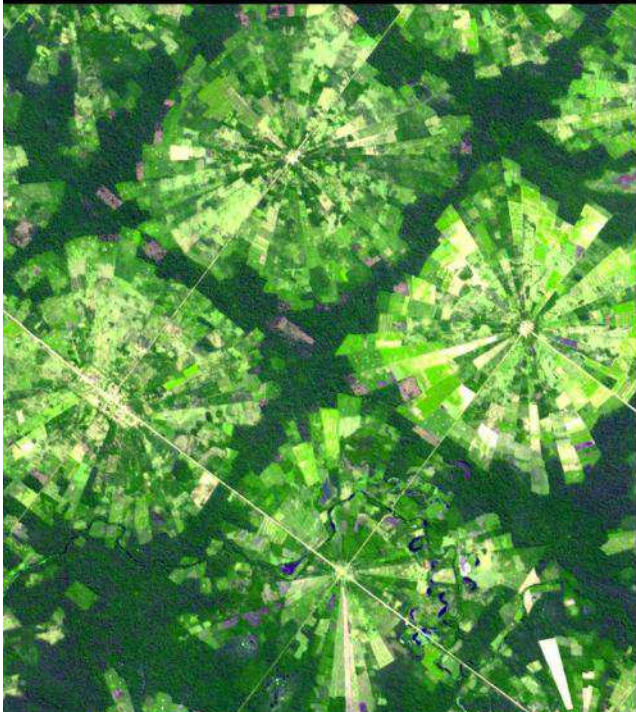
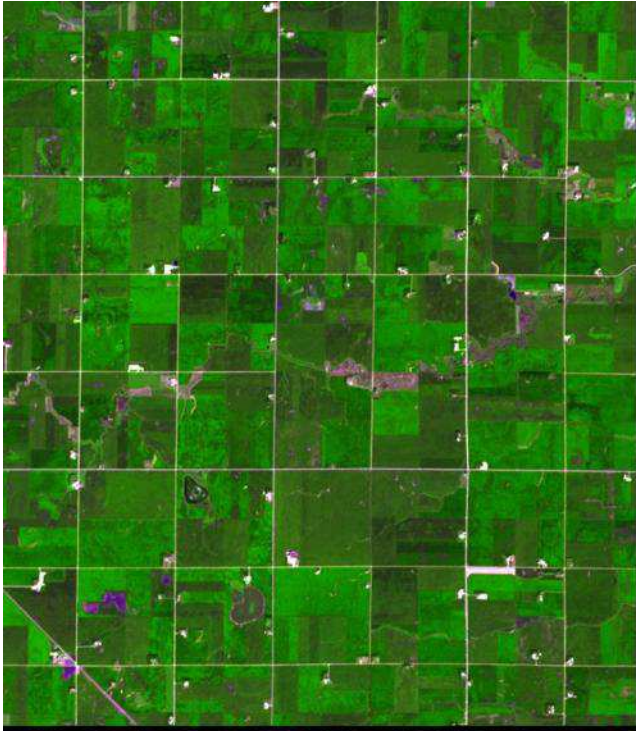


2. ZEMĚDĚLSTVÍ

Příklady využití:

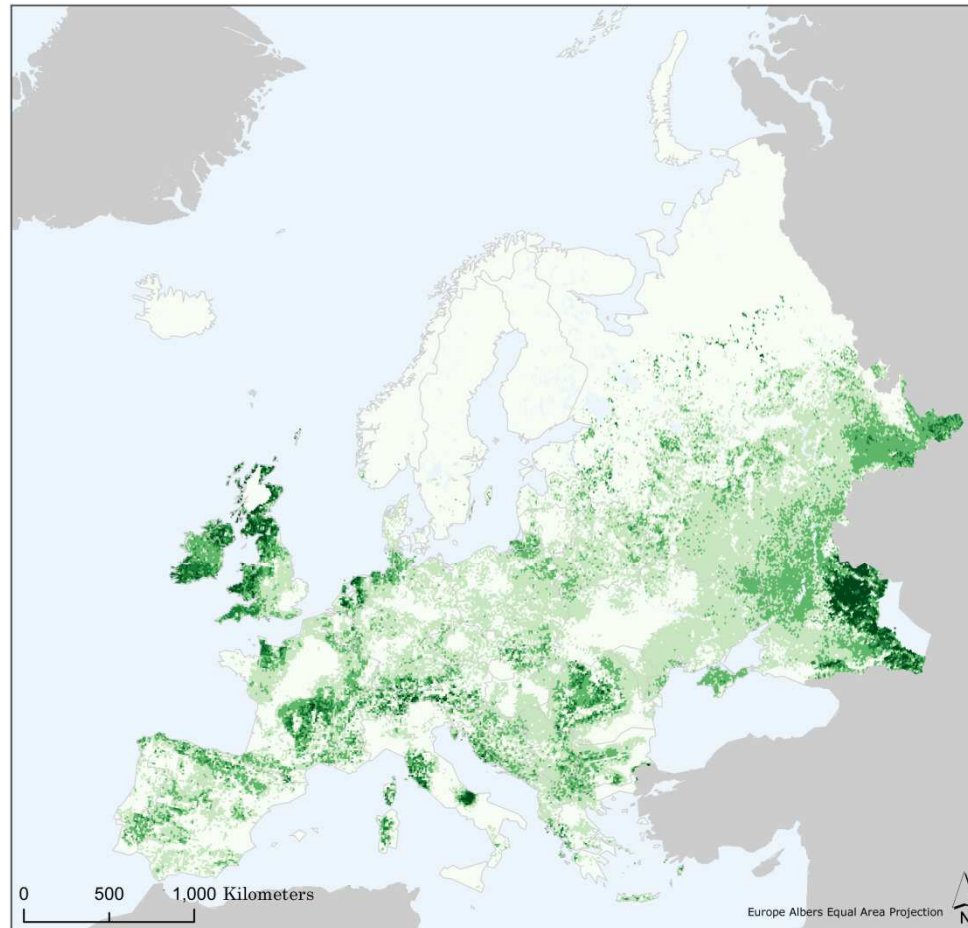
- odhad úrody (zdravotního stavu, kvantity, kvality)
- mapování zemědělských postupů
- odhad škod na úrodě
- zdravotní stav vegetace
- identifikace druhů a typů vegetace
- mapování heterogenity půdy a mapování pozemků s zemědělskými kulturami





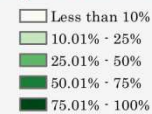
Pastures, 2000: Europe

Global Agricultural Lands



Global Pastures in 2000 map the proportion of each 5 minute (10km) grid cell land area that is under pasture. Dark shaded areas denote higher proportion of area under pasture. Data from Moderate Imaging Spectroradiometer (MODIS) land cover product and Satellite Pour l'Observation de la Terre (SPOT) VEGETATION's Global Land Cover 2000 product were combined with UN Food and Agriculture (FAO) agricultural

Percent grid cell area under pasture



Publication Date: 3/2012

Center for International Earth
Science Information Network
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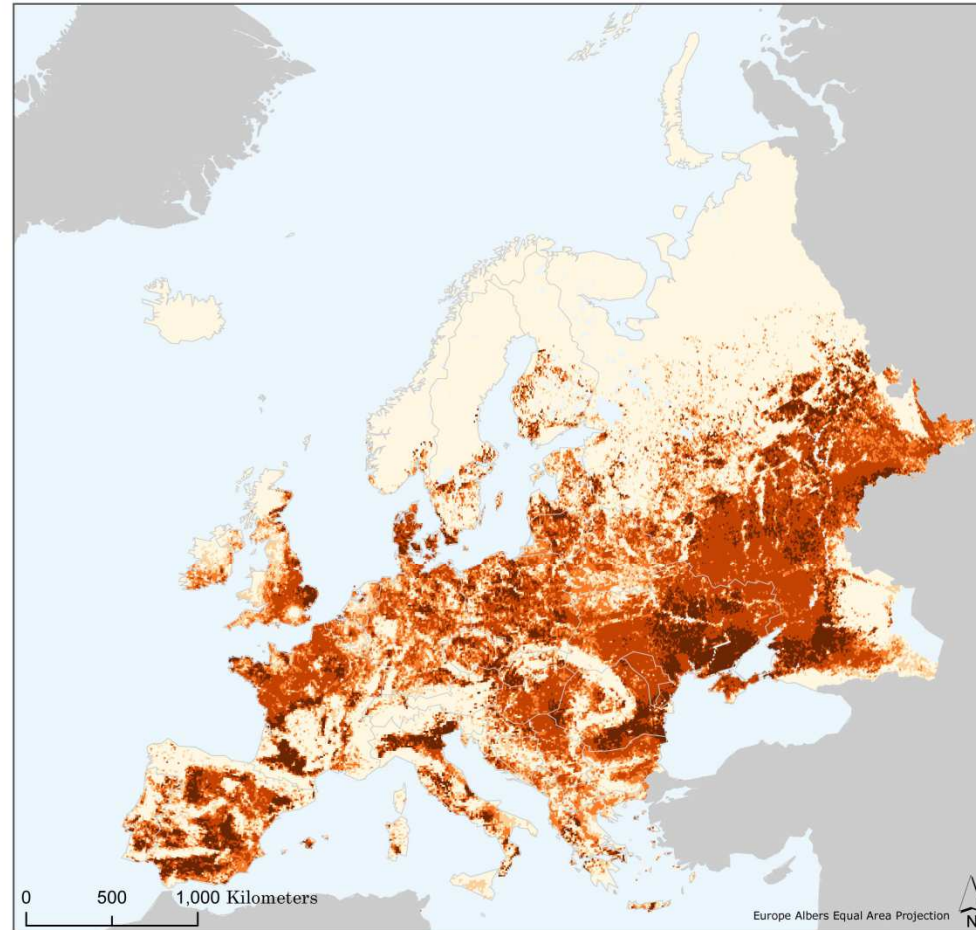
Copyright 2012. The Trustees of Columbia University in the City of New York.
Data Source: Ramankutty, N., A.T. Evan, C. Monfreda, and J.A. Foley. 2010. Global Agricultural Lands: Pastures, 2000. Palisades, NY: NASA Socioeconomic Data and Applications Center (SEDAC). <http://sedac.ciesin.columbia.edu/data/set/aglands-pastures-2000>.



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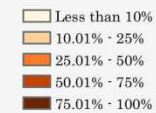
Croplands, 2000: Europe

Global Agricultural Lands



Global Croplands in 2000 map the proportion of each 5 minute (10km) grid cell land area that is under cropland. Dark shaded areas denote higher proportion of area under cropland. Data from Moderate Imaging Spectroradiometer (MODIS) land cover product and Satellite Pour l'Observation de la Terre (SPOT) VEGETATION's Global Land Cover 2000 product were combined with UN Food and Agriculture (FAO) agricultural

Percent grid cell area under cropland



Publication Date: 3/2012

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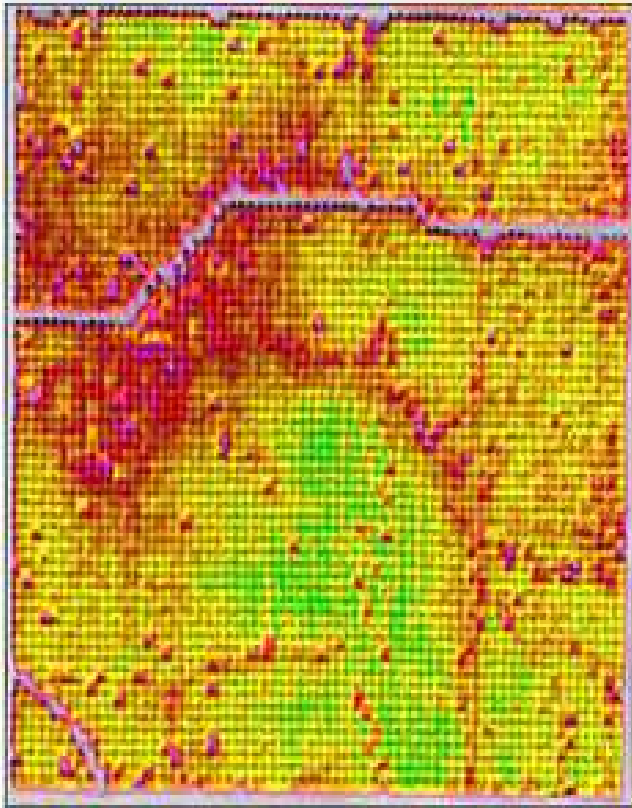


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Data Source: Ramankutty, N., A.T. Evan, C. Monfreda, and J.A. Foley. 2010. Global Agricultural Lands: Croplands, 2000. Palisades, NY: NASA Socioeconomic Data and Applications Center (SEDAC). <http://sedac.ciesin.columbia.edu/data/sets/aglands-croplands-2000>.

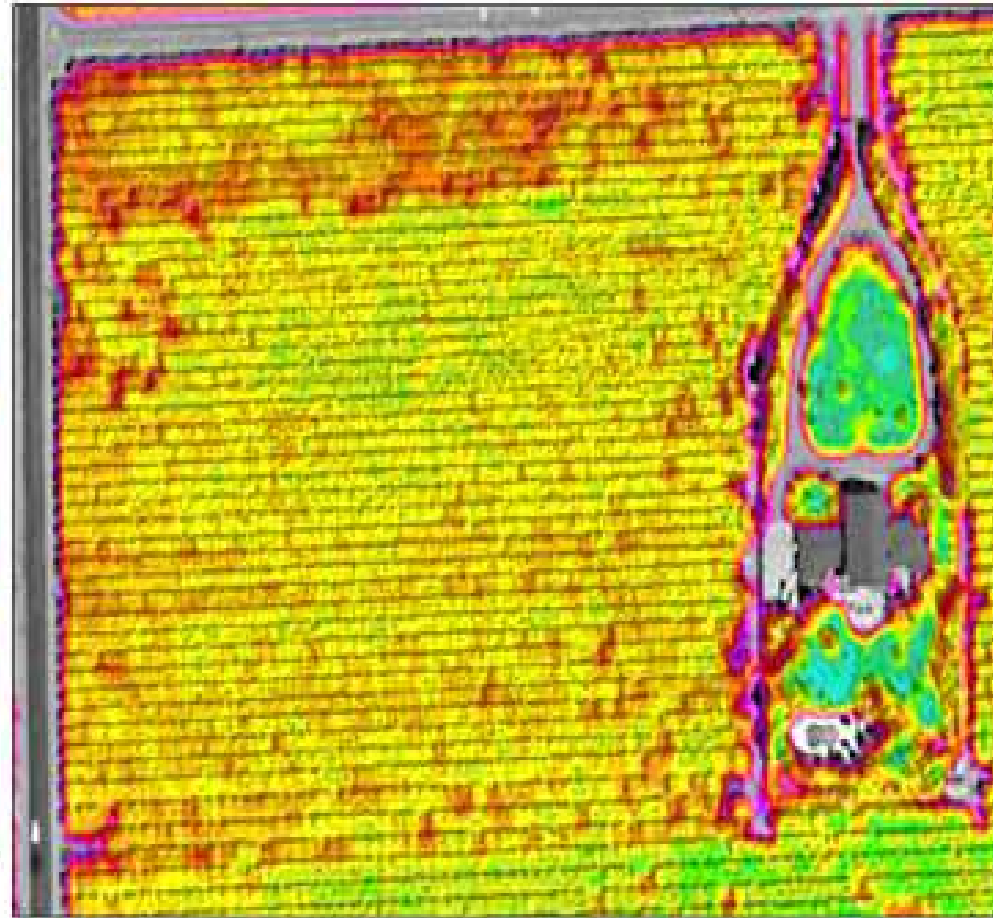


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Soils

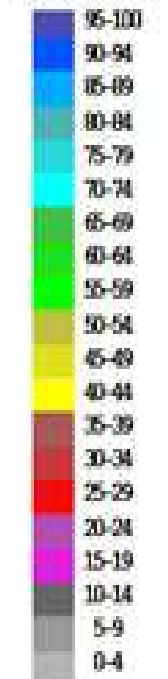


Health

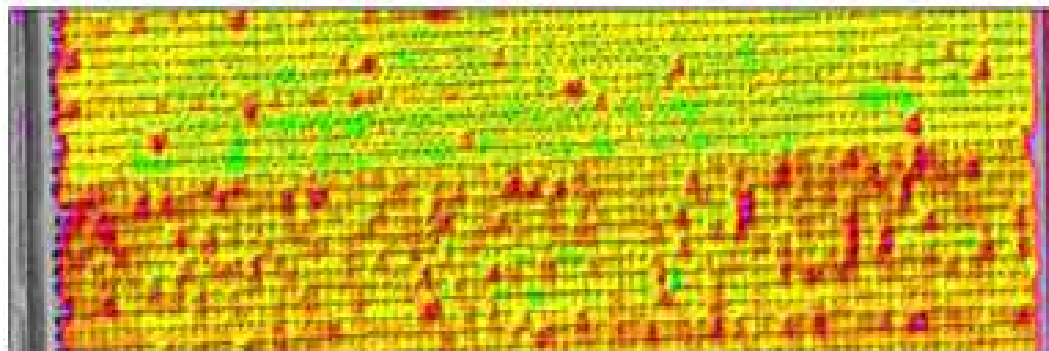


Dense Vegetation

GVI Color GVI Index



Bare Soil



Irrigation

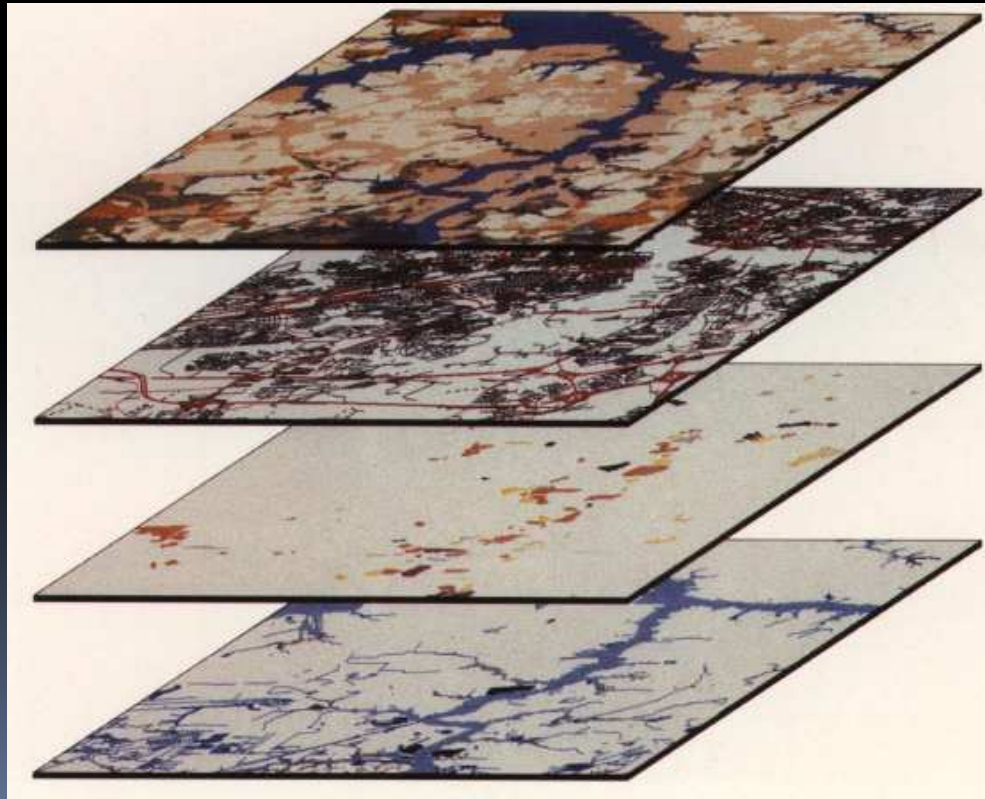
Green colors show the densest canopy

Grey colors indicate bare soil

3. HISTORICKÁ GEOGRAFIE

Příklady využití:

- srovnávání historických snímků (snímky LANDSAT)
- vyhledávání a dokumentace archeologických památek



Computational techniques used to analyze data.

1. sun-angle correction
2. density slicing
3. band ratioing
4. edge enhancement
5. synthetic color assignment
6. filtering
7. multichannel analysis

Arenal Region, Kostarika



Computational techniques used to analyze data.

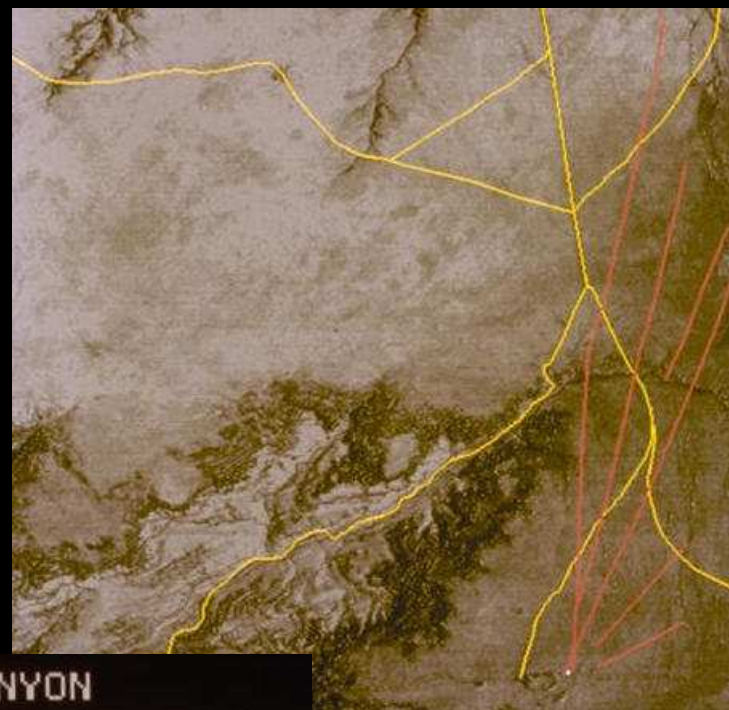
1. sun-angle correction
2. density slicing
3. band ratioing
4. edge enhancement
5. synthetic color assignment
6. filtering
7. multichannel analysis

Devastated by ten volcanic eruptions over the past 4000 years

Color Infrared Photograph showing suspected road.

<http://www.satimagingcorp.com/gallery-ancient-observatories.html>

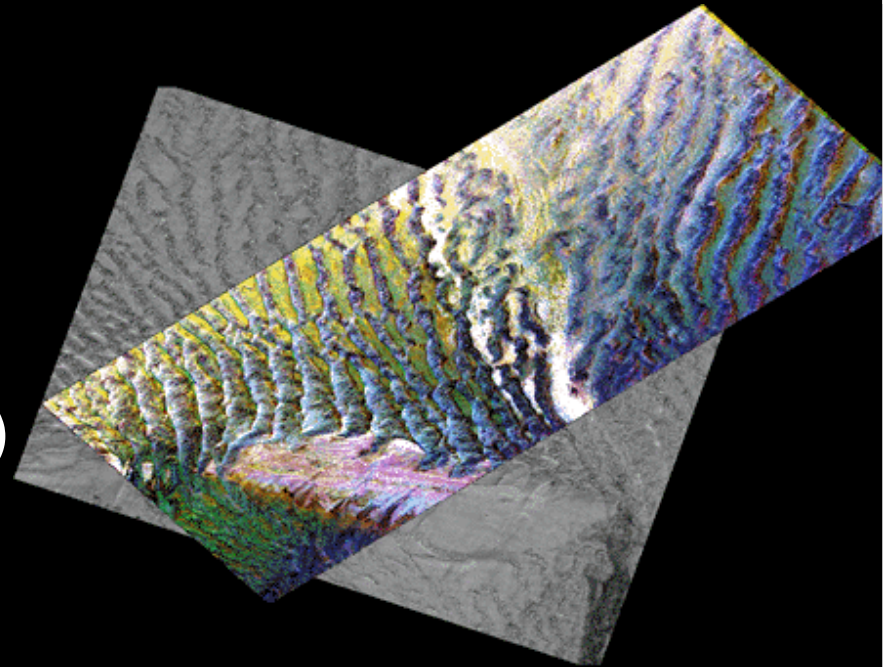
Chaco Canyon, Nové Mexiko, prehistorické cesty



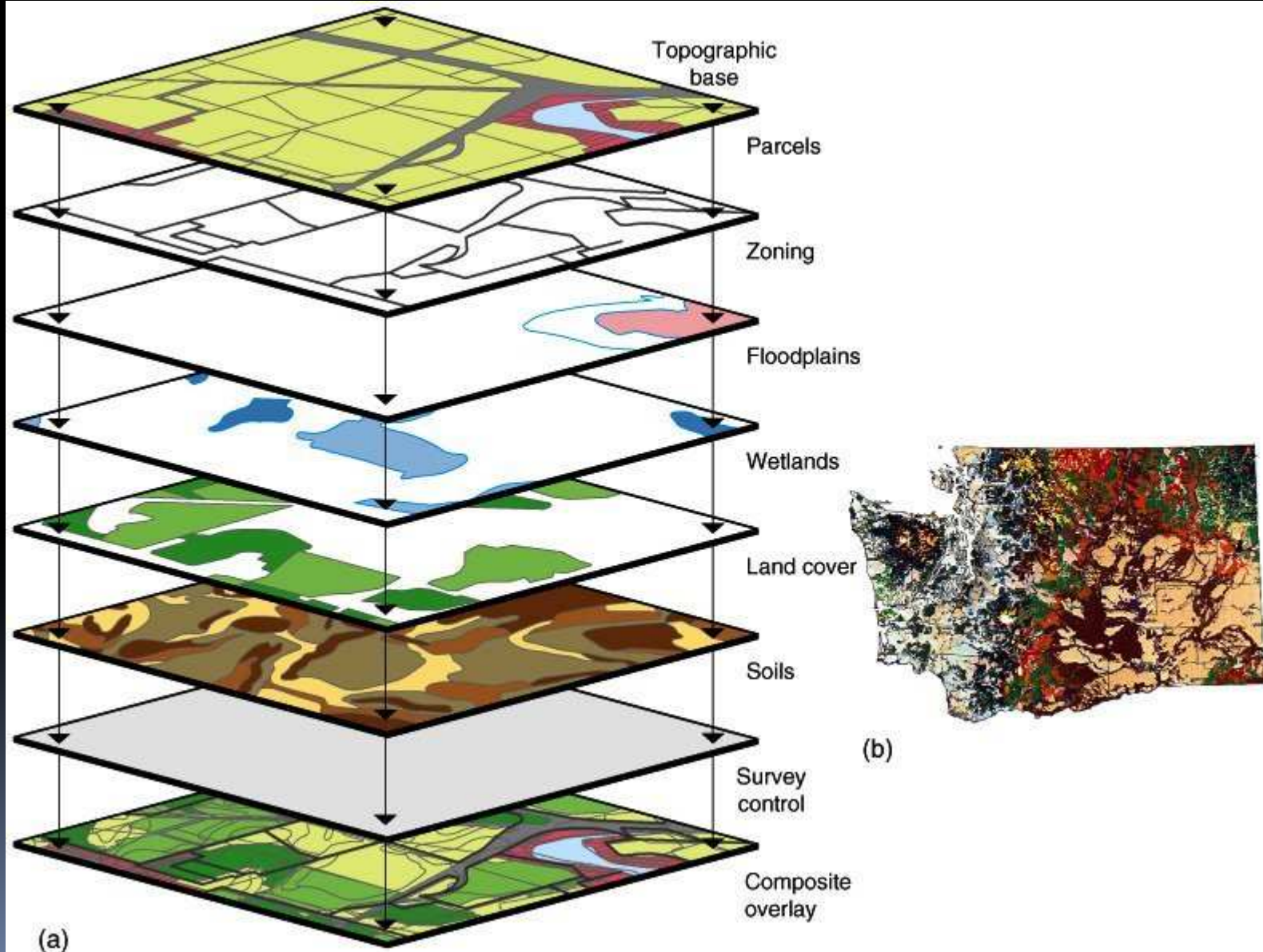
DPZ V KARTOGRAFII

Příklady využití:

- tvorba DMR (digitálních modelů reliéfu)
- stereoskopická tvorba 3D map
- tématické mapování
- a mnoho dalšího...



Integrace GIS do DPZ



DPZ V NEGEOGRAFICKÝCH DISCIPLÍNÁCH

Příklady využití:

- **vojenství**
- **telekomunikace**
- **varovné systémy**
- **informační systémy: GPS navigace, mobilní signály (112)**
- **logistika**
- **atd. atd. atd. atd**

