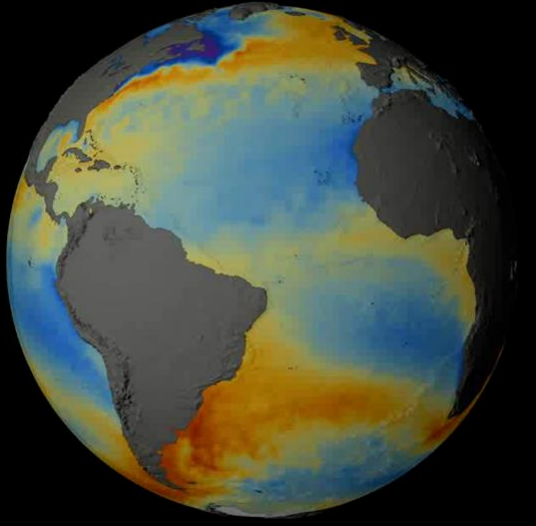
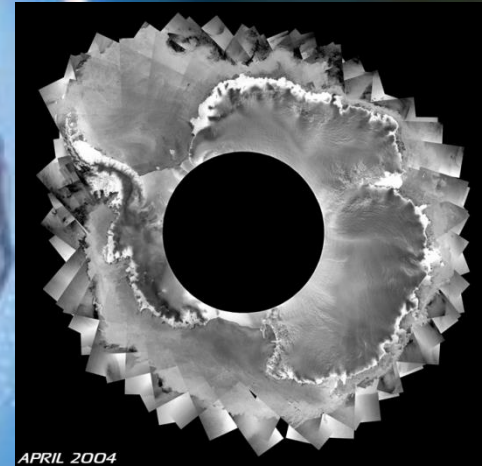
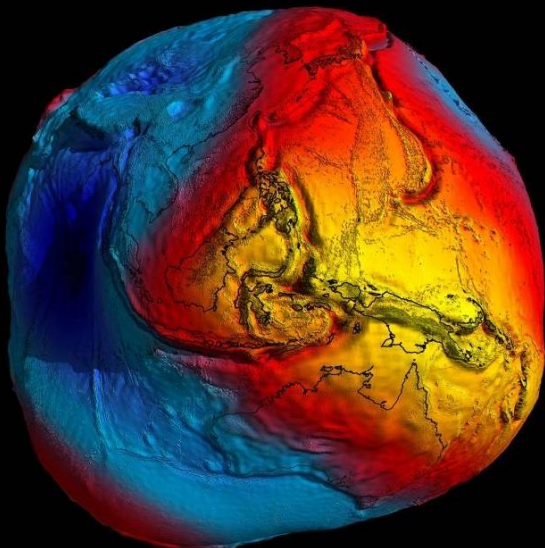
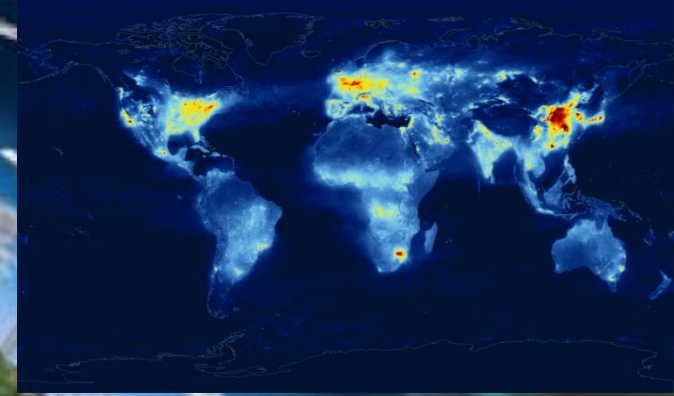




Earth Observation



**Department of Applied Geoinformatics and
Cartography**

Charles University, Prague

Premysl Stych, Natalia Kobliuk

Charles University, Prague

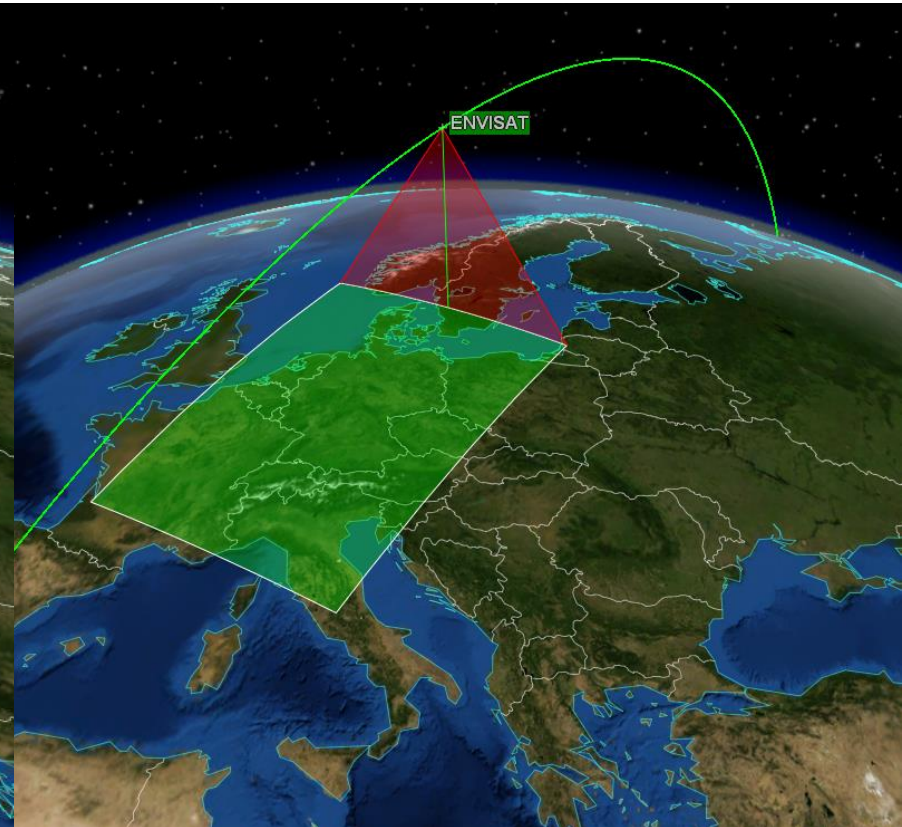
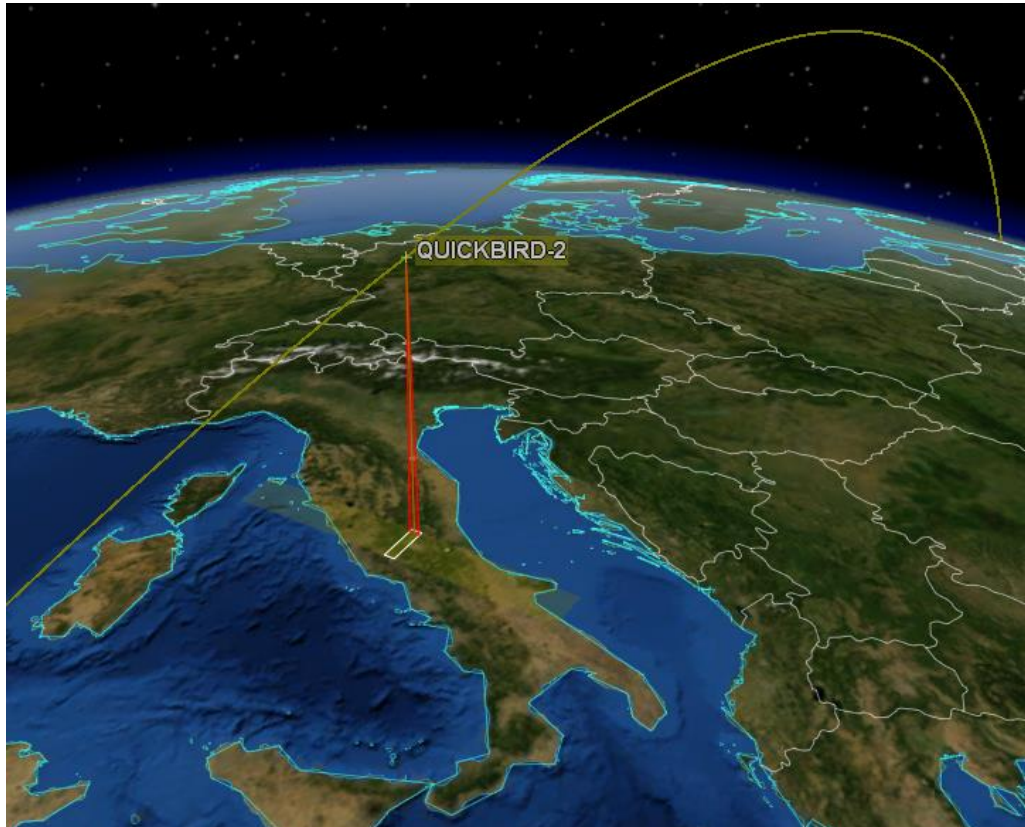
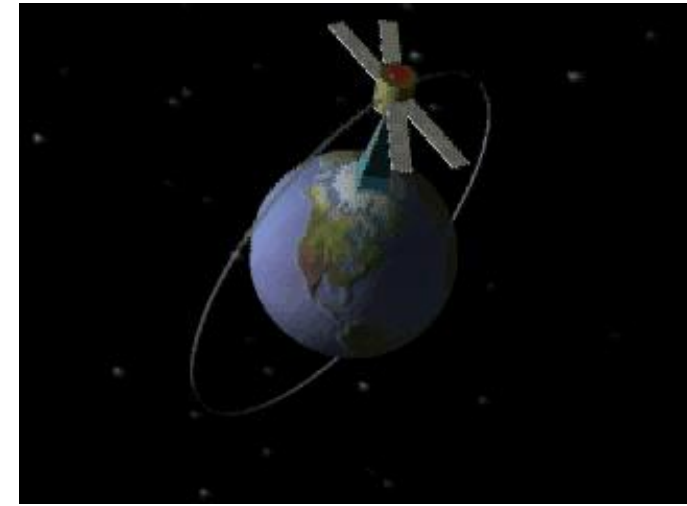


The Department of Applied Geoinformatics and Cartography

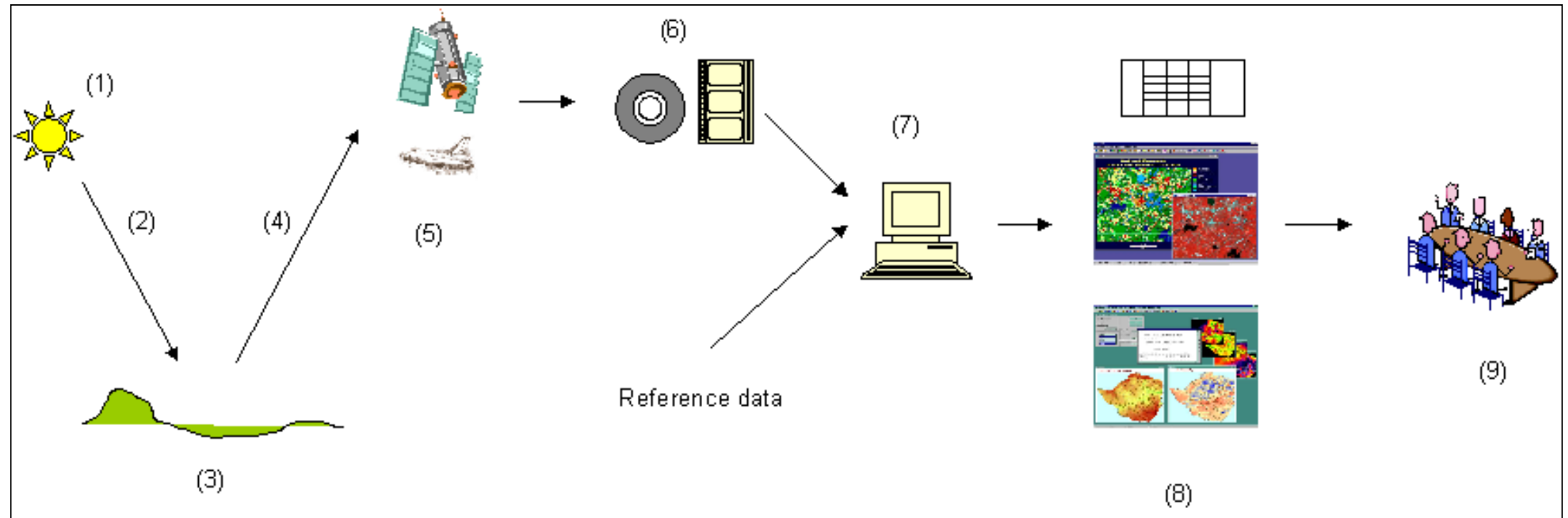
- Education in the fields of:
 - GIS a geodatabases
 - Remote sensing and photogrammetry
 - Cartography
 - Computational geometry, algorithm development & programming
 - Geodetic and surveying methods of data collection

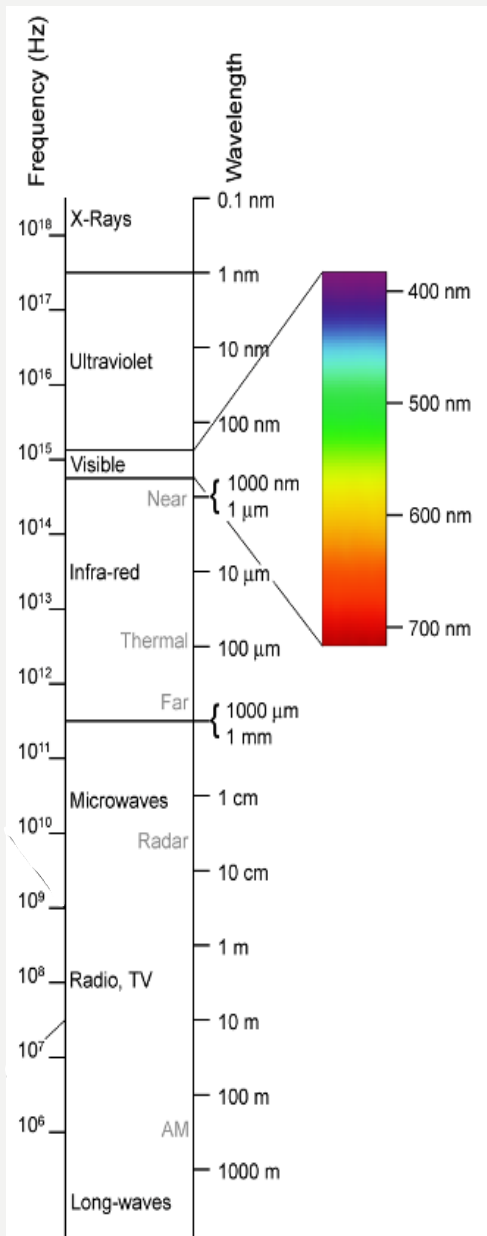
<https://www.natur.cuni.cz/>

Earth Observation

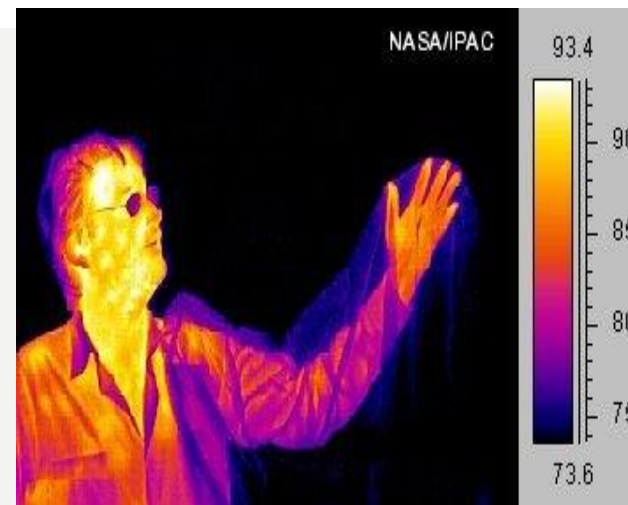
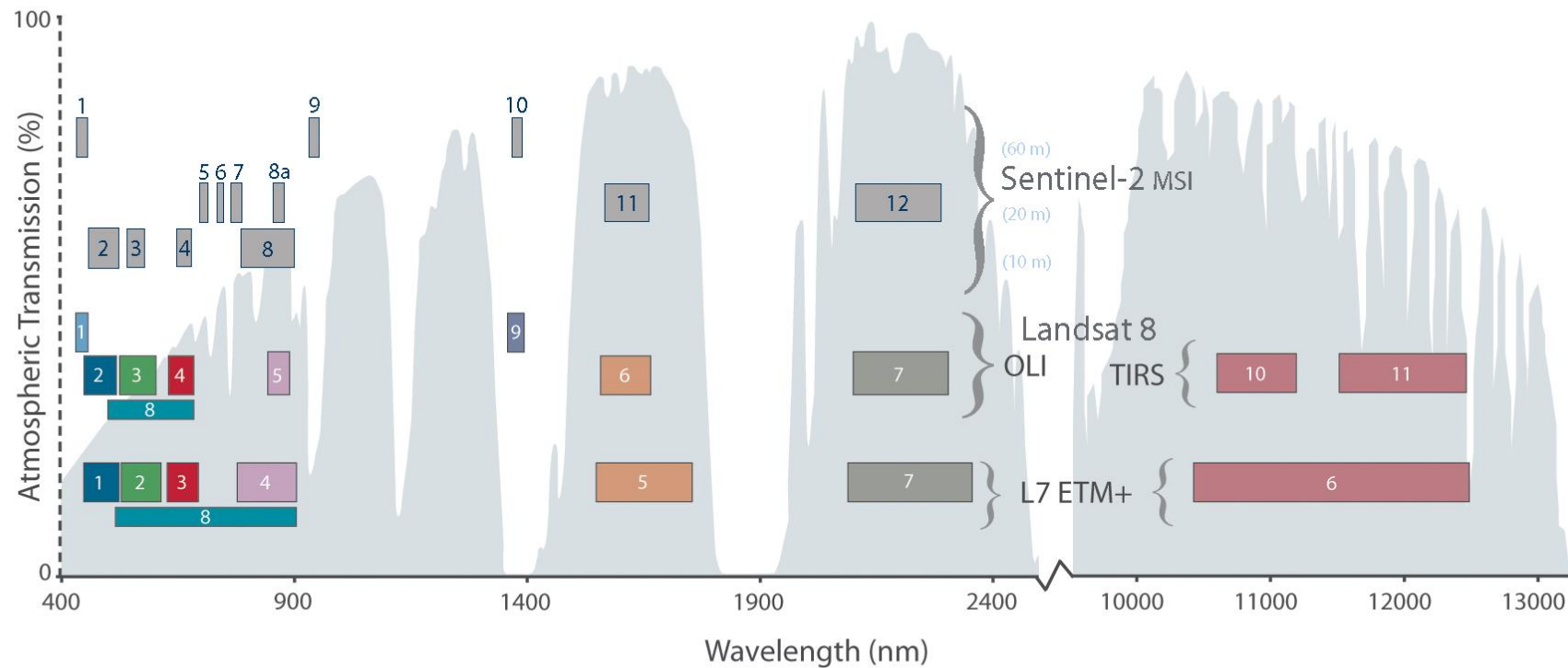


Principle

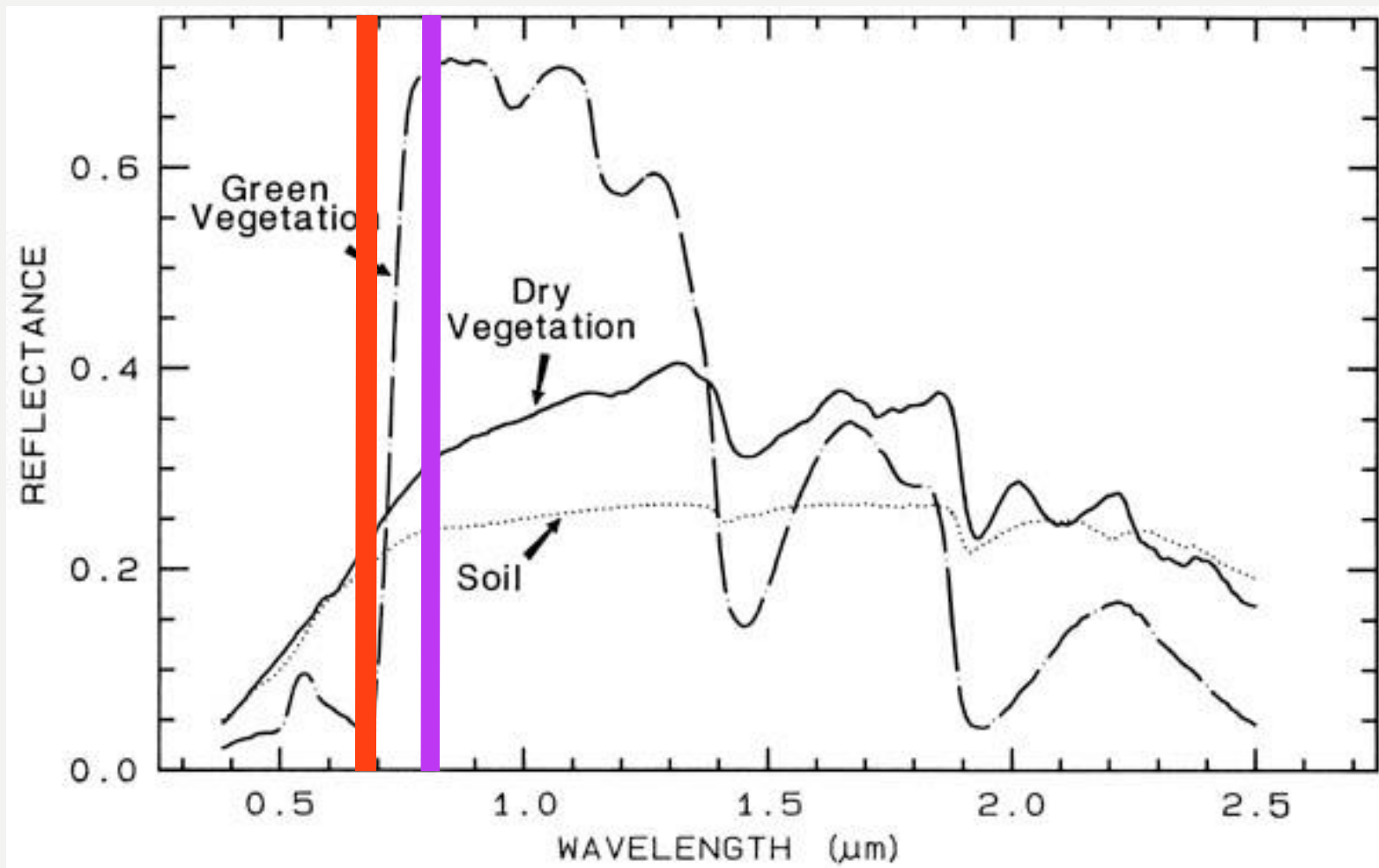


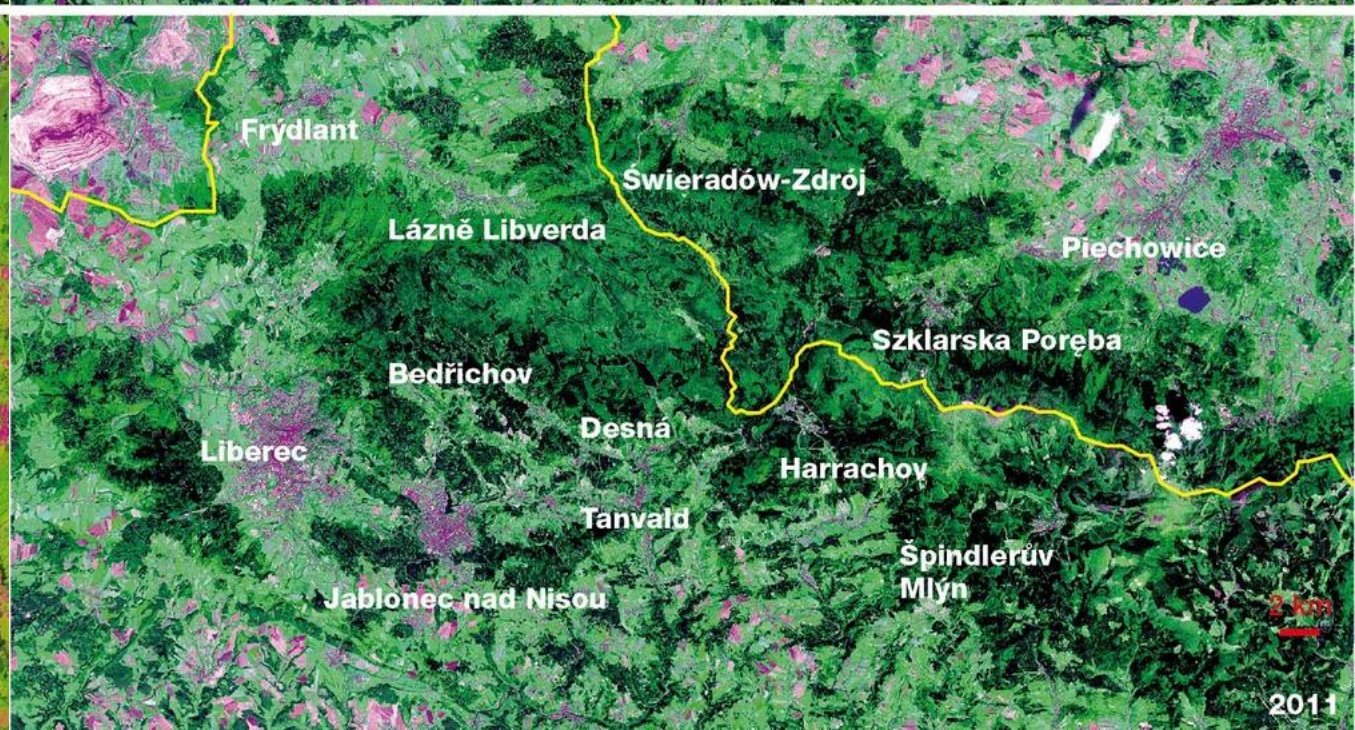


Comparison of Landsat 7 and 8 bands with Sentinel-2



red NIR





VEGETATION INDICES

BIRTH, G., G. MCVEY (1968): Measuring the Color of Growing Turf with a Reflectance Spectrophotometer. *Agronomy Journal* 60 (1968): pp. 640-643.

DEERING, D. W., ROUSE, J. W., HAAS, R. H., and SCHELL, J. A. (1975): Measuring Forage Production of Grazing Units from Landsat MSS Data. 10th International Symposium on Remote Sensing of Environment 2: pp. 1169-1178

JENSEN, J. (2007): *Remote Sensing of the Environment: An Earth Resource Perspective*. Pearson Prentice Hall, 2007. University of Minnesota. 592 p. ISBN: 0131889508.

JIN, S., SADER, S. (2004): Comparison of time series tasselled cap wetness and the normalized difference moisture index in detecting forest disturbances. *Remote Sensing of Environment*, 94, pp. 364–372.

MUSILOVÁ, R. (2012): Využití dat DPZ pro hodnocení aktuálního stavu a vývoje smrkových porostů v Krkonoších. Diplomová práce na Přírodovědecké fakultě Univerzity Karlovy na katedře aplikované geoinformatiky a kartografie. Vedoucí práce Lucie Kupková.

ROUSE, J., HAAS, R., SCHELL, J., DEERING, D. (1973): Monitoring Vegetation Systems in the Great Plains with ERTS. Third ERTS Symposium, NASA (1973): pp. 309-317.

WANG J., SAMMIS T., GUSTCHICK V. (2010): Review of Satellite Remote Sensing Use in Forest Health Studies. New Mexico State University. 15 s.

$$NDVI = \frac{NIR - RED}{NIR + RED}$$

$$SR = \frac{NIR}{RED}$$

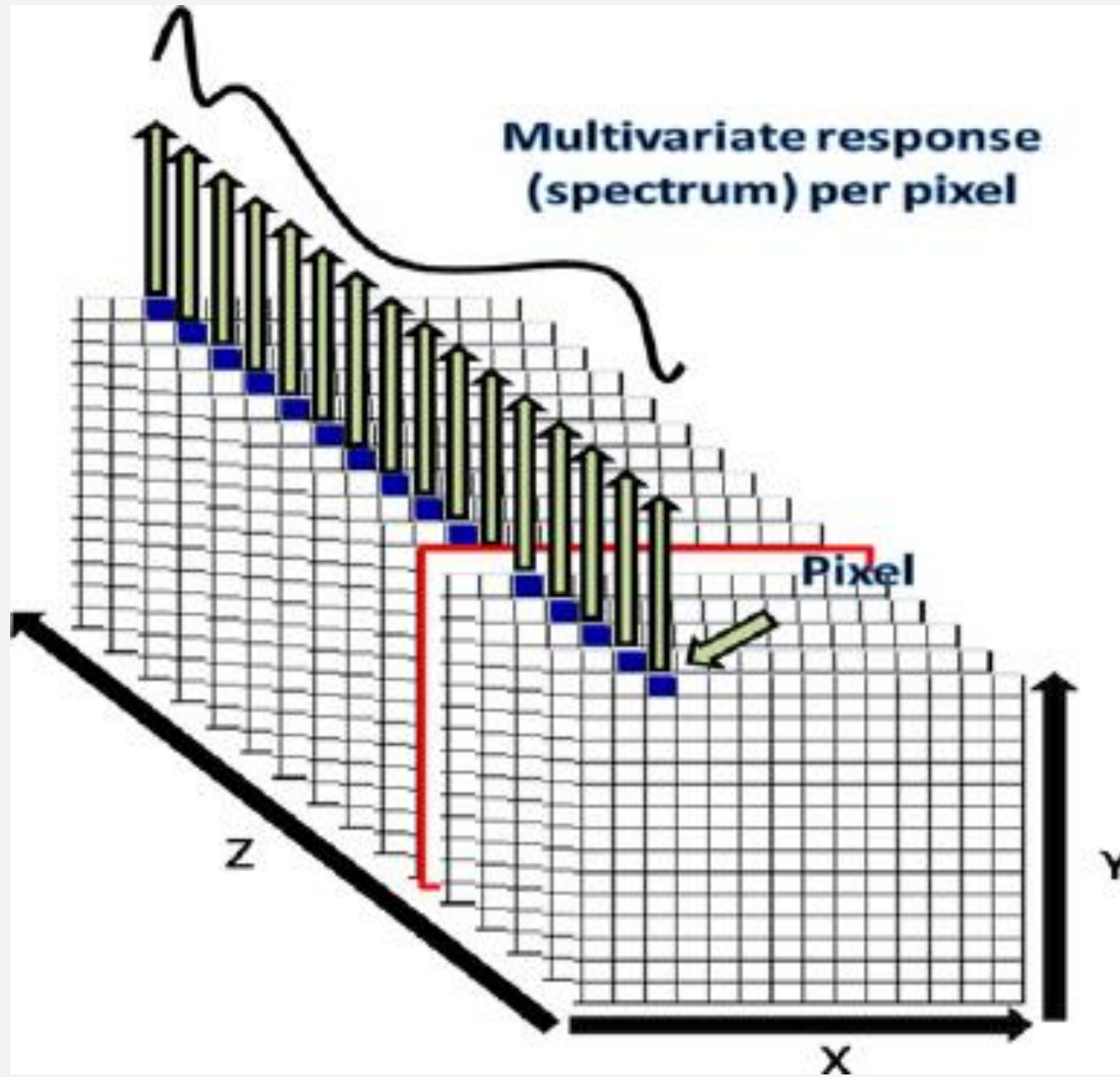
$$NDMI = \frac{NIR - SWIR}{NIR + SWIR}$$

$$FMI = \frac{NIR}{RED * SWIR}$$

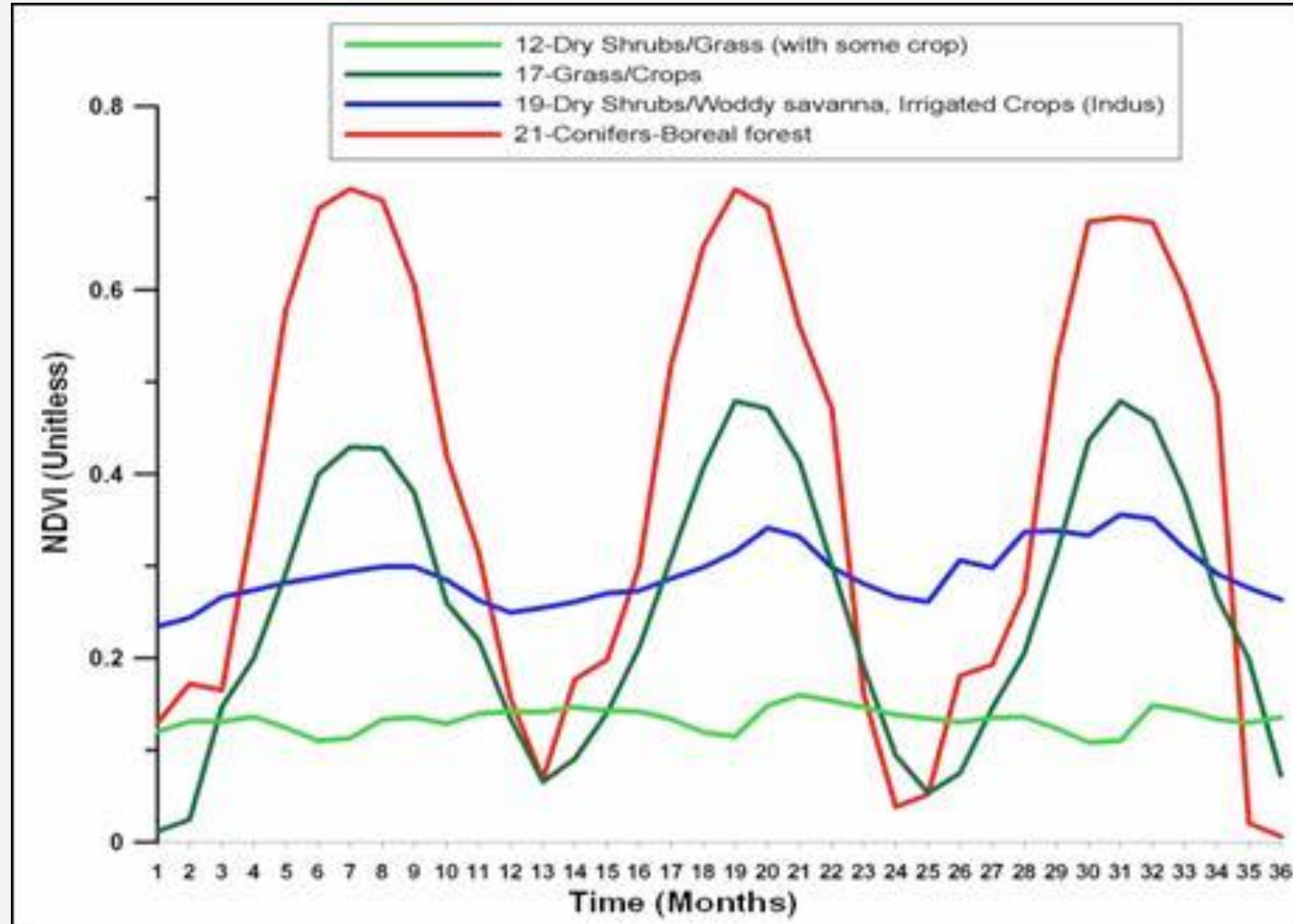
$$wNDII = \frac{2NIR - SWIR}{2NIR + SWIR}$$

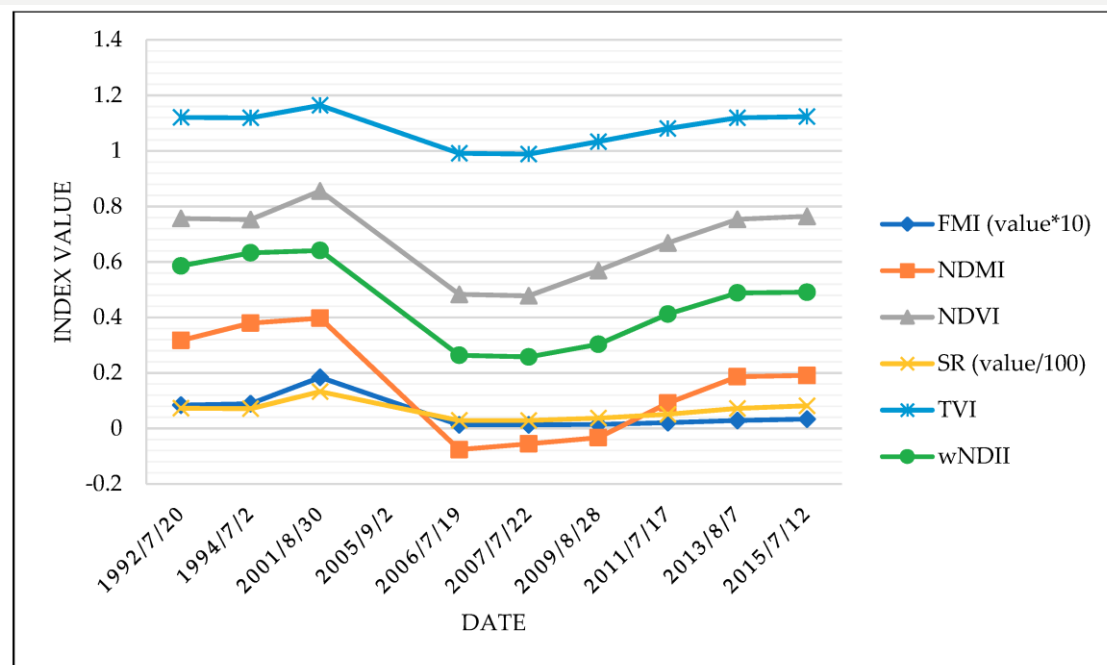
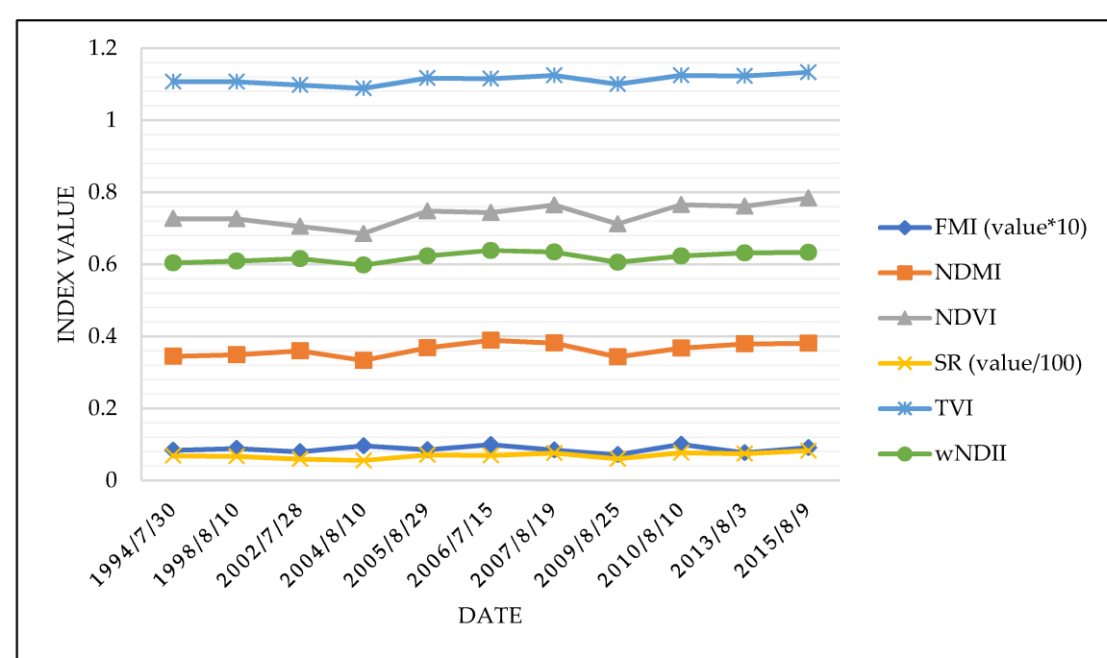
$$TVI = \sqrt{\frac{(NIR - RED)}{(NIR + RED)}} + 0,5$$

multi-temporal response



TEMPORAL EXAMPLE





Thank you for your attention

Přemysl Štych (stych@natur.cuni.cz)