

Workshop Mini-mapathon

Intro: Fjärranalys – grundläggande

Nätverk: Conventum_smart

Lösen: conventum2017



Huvudpartners



GEOGRAFISKA INFORMATIONSBYRÅN



Geografiska Informationsbyrån

Startade sep 2015



Sara Wiman, Civ Ing
Lantmätare



Tobias Edman, Fil. Dr
Biolog



Greger Lindeberg Fil.
Dr
Geolog

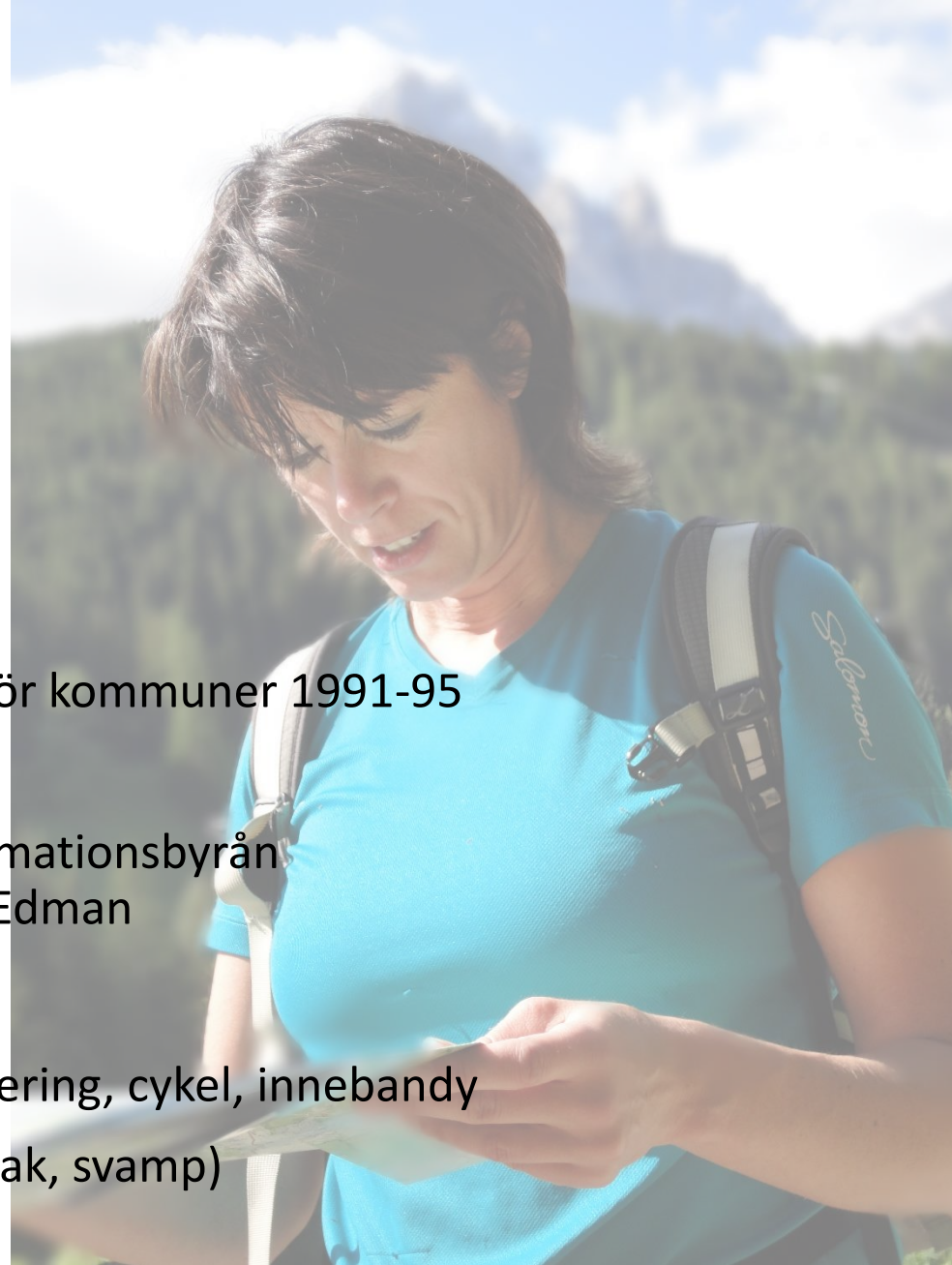
Sara Wiman

- Jobbet

- Teknisk Lantmätare, KTH
- Applikationsingenjör; GIS-system för kommuner 1991-95
- Fjärranalys sedan 1996
- Från 2015-09-07 Geografiska Informationsbyrån med Greger Lindeberg och Tobias Edman

- Privat

- Idrottsintressen bl.a. skidor, orientering, cykel, innebandy
- Dans, turer (skridsko, vandring, kajak, svamp)



Greger Lindeberg

- **Jobbet**
 - Geolog
 - Jobbat som konsult inom GIS, risk och samhällsplanering
 - Från 2015-09-07 Geografiska Informationsbyrån tillsammans med Sara Wiman och Tobias Edman
- **Privat**
 - Spela musik, jazz folk etc
 - Resa

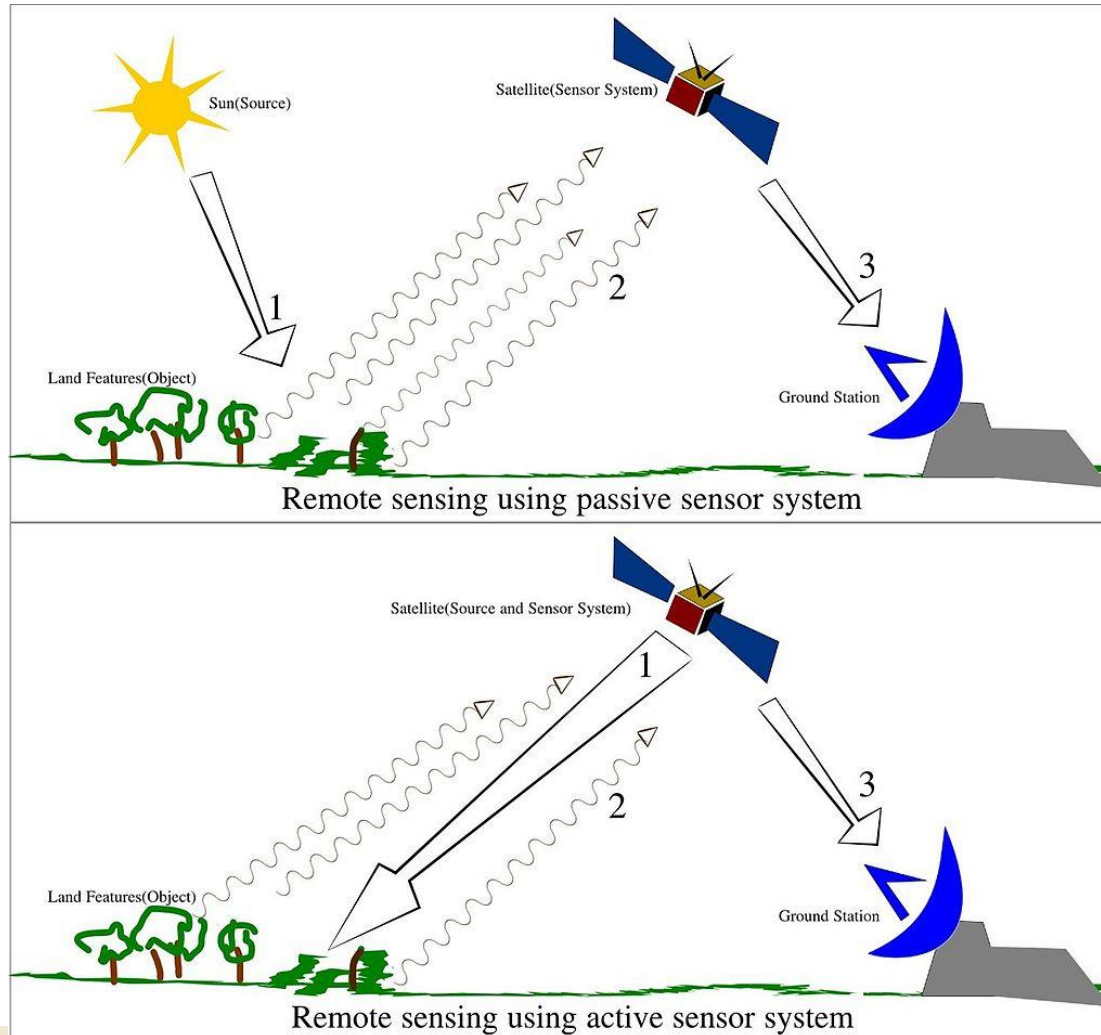


Johnnie Hård

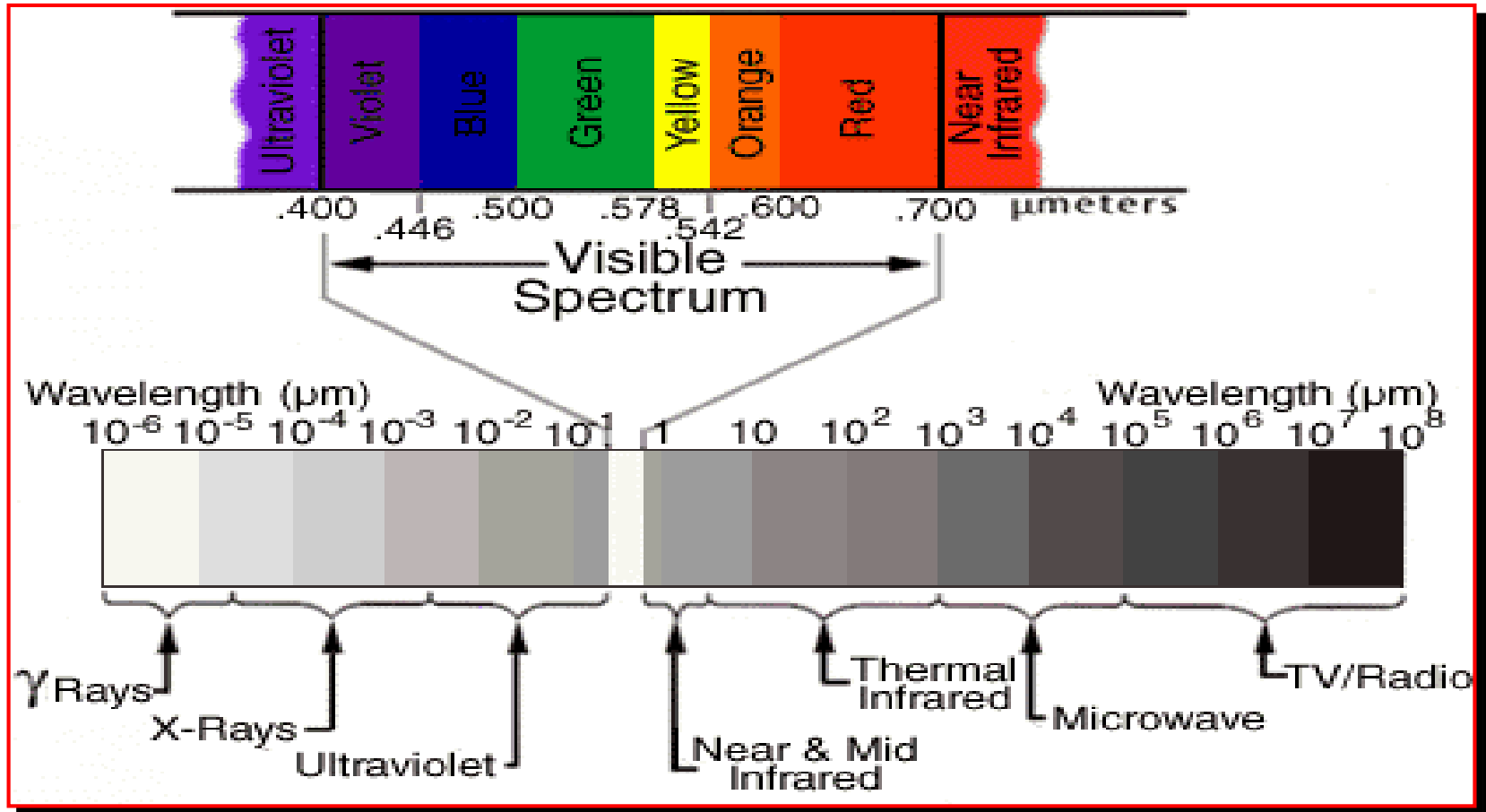
Praktiserar hos
GIB under våren
Studerar på
Stockholms universitet



Passiva/aktiva sensorer (optiska/radar)



Elektromagnetiska spektrat



Upplösning

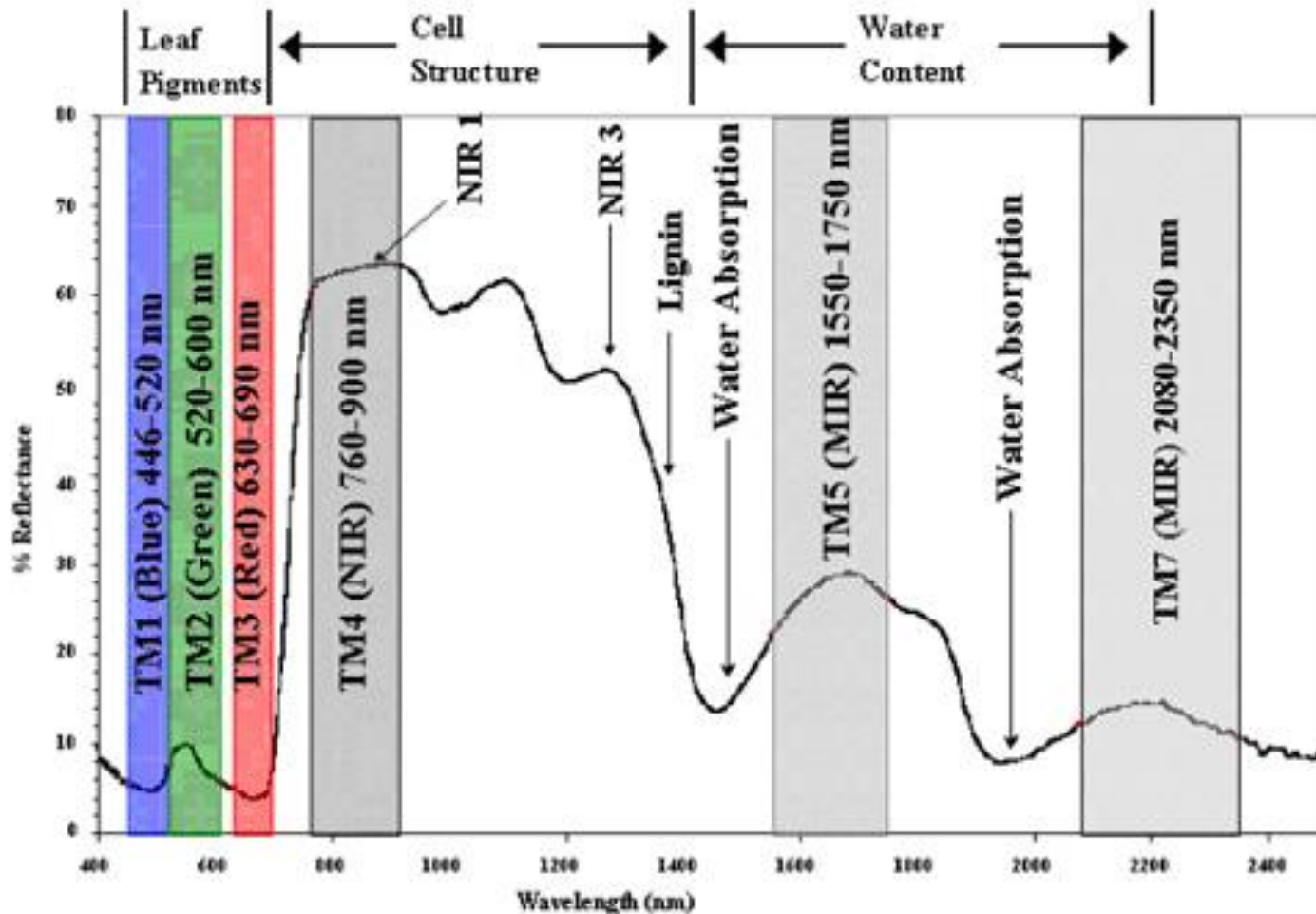
- Geometrisk - detaljeringsgrad (pixelstorlek)
- Radiometrisk - antal digitalnivåer per band (8-14 bitar = 256 – 16384 DN)
- Spektral - antal våglängdsband
- Temporal - återkomsttid till samma plats

Detaljeringsgrad - geometrisk upplösning

8cm, 0.5m, 1m, 10m

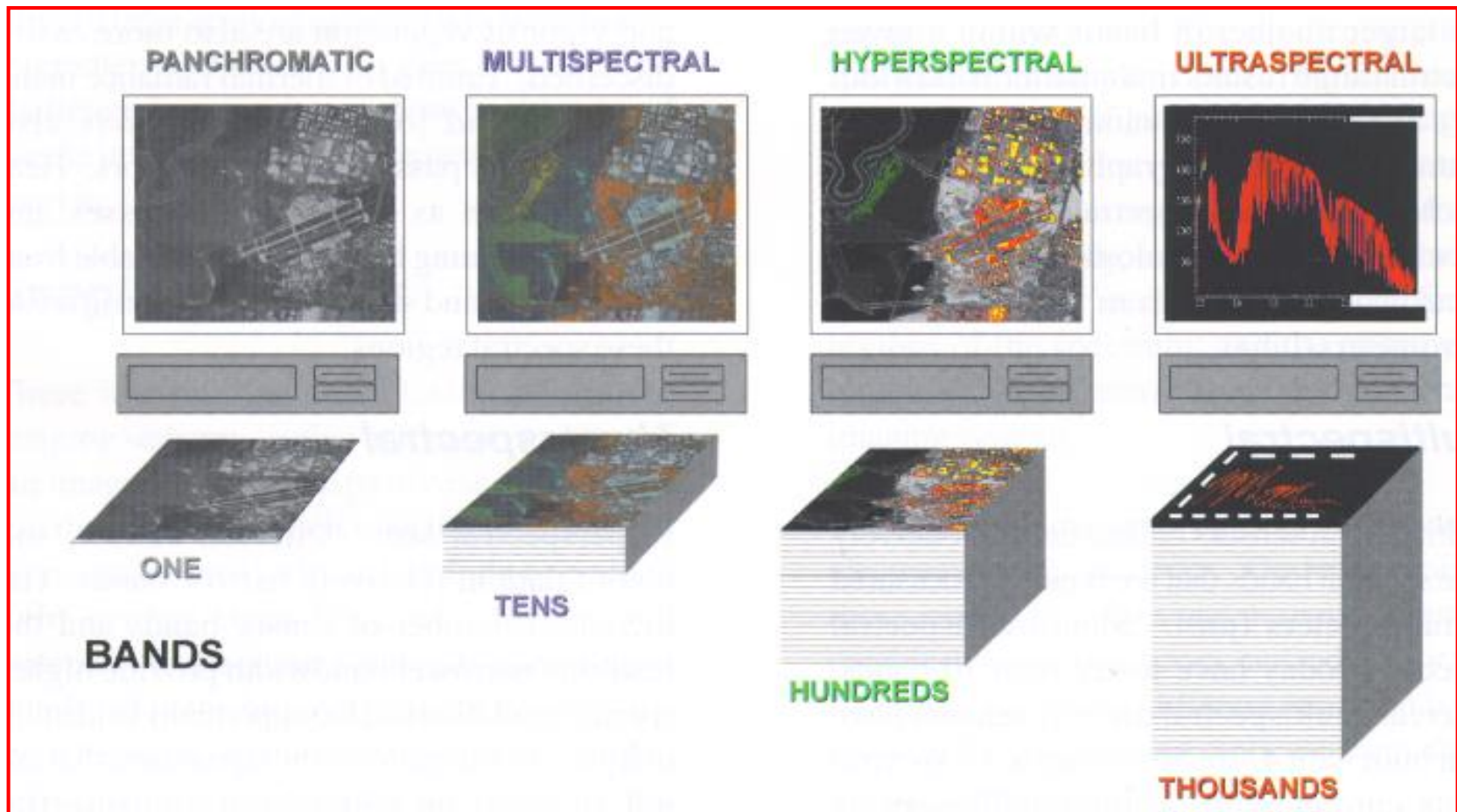


Spektral upplösning och karakteristik för olika objekt på marken

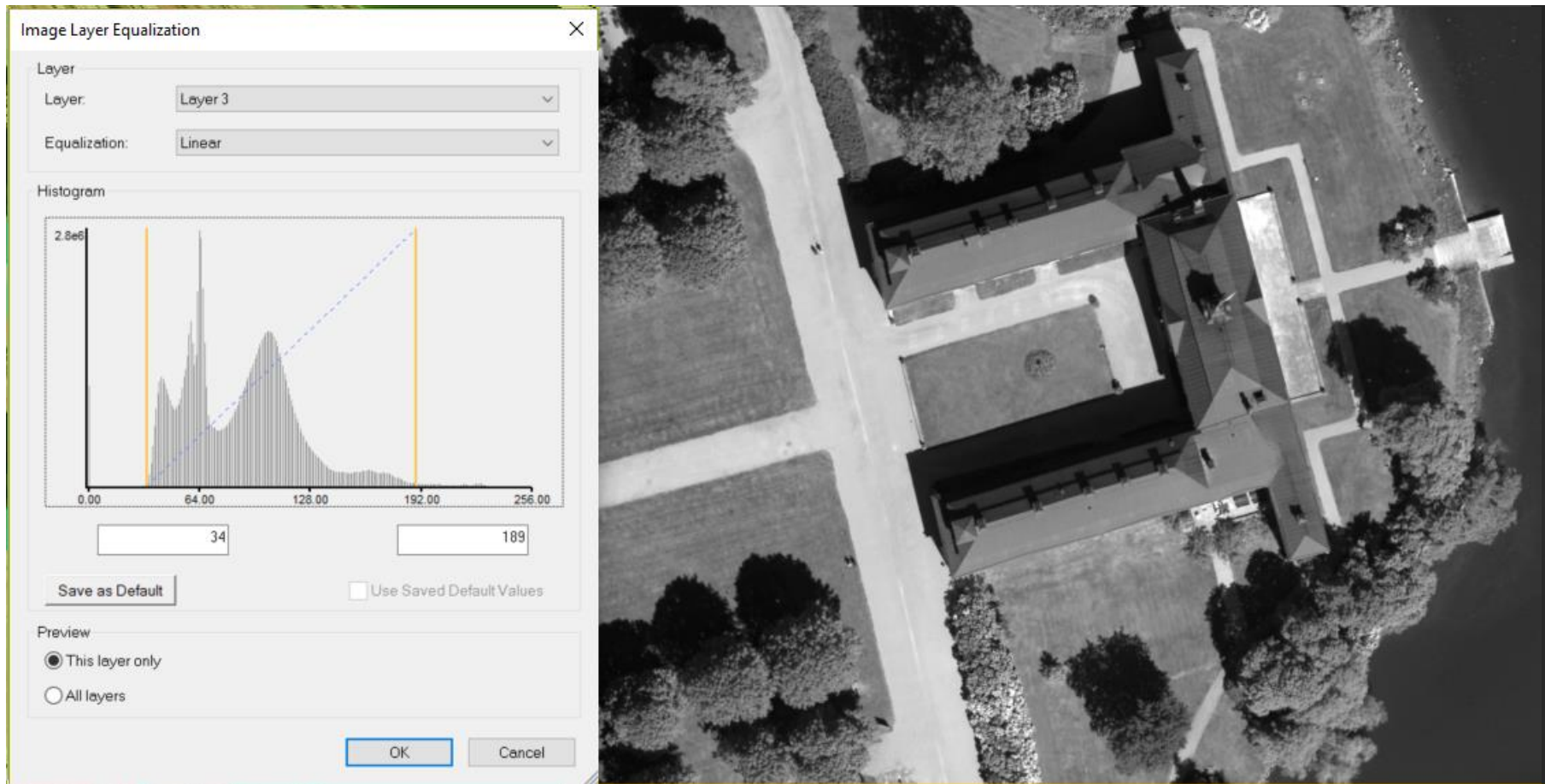


Spektral upplösning

Antal våglängdsband



Histogram – hur många pixlar/grånivå (digitalnivå)



Sträck bilden och se mer

Image Layer Equalization

Layer
Layer: Layer 3
Equalization: Linear

Histogram

2.8e6
0.00 64.00 128.00 192.00 256.00

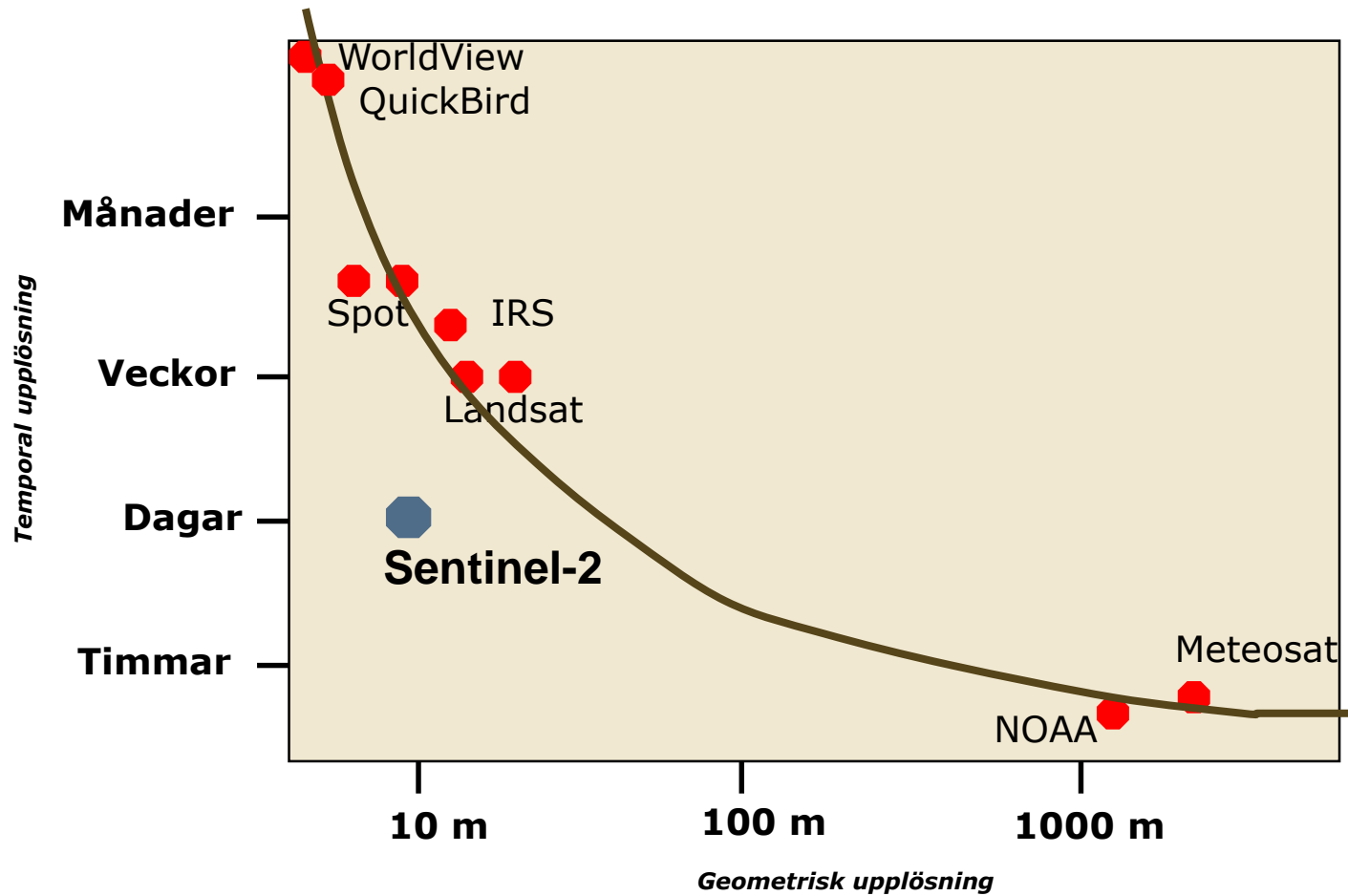
34 189

Save as Default

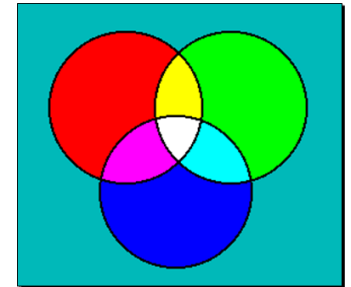
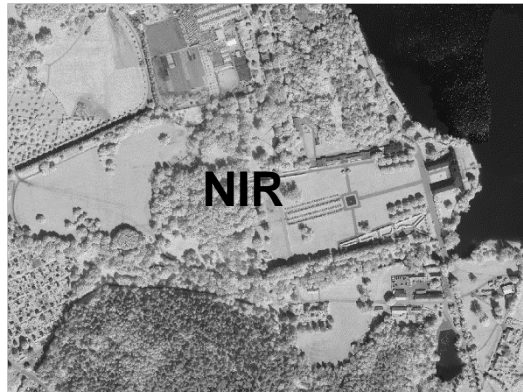
Preview
 This layer only
 All layers



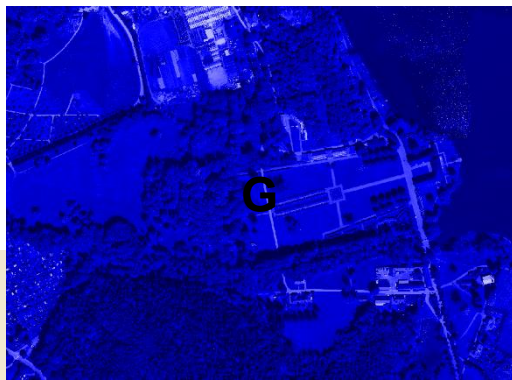
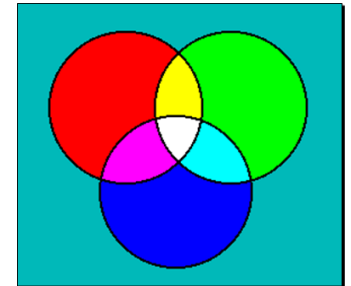
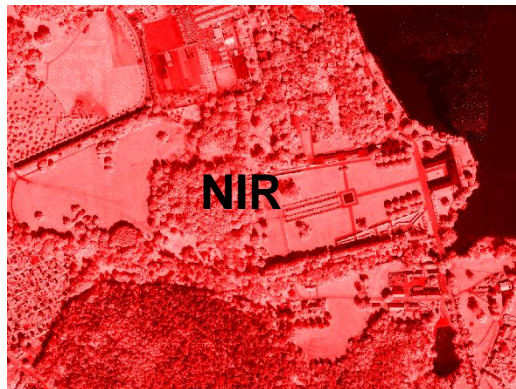
Temporal vs geometrisk upplösning



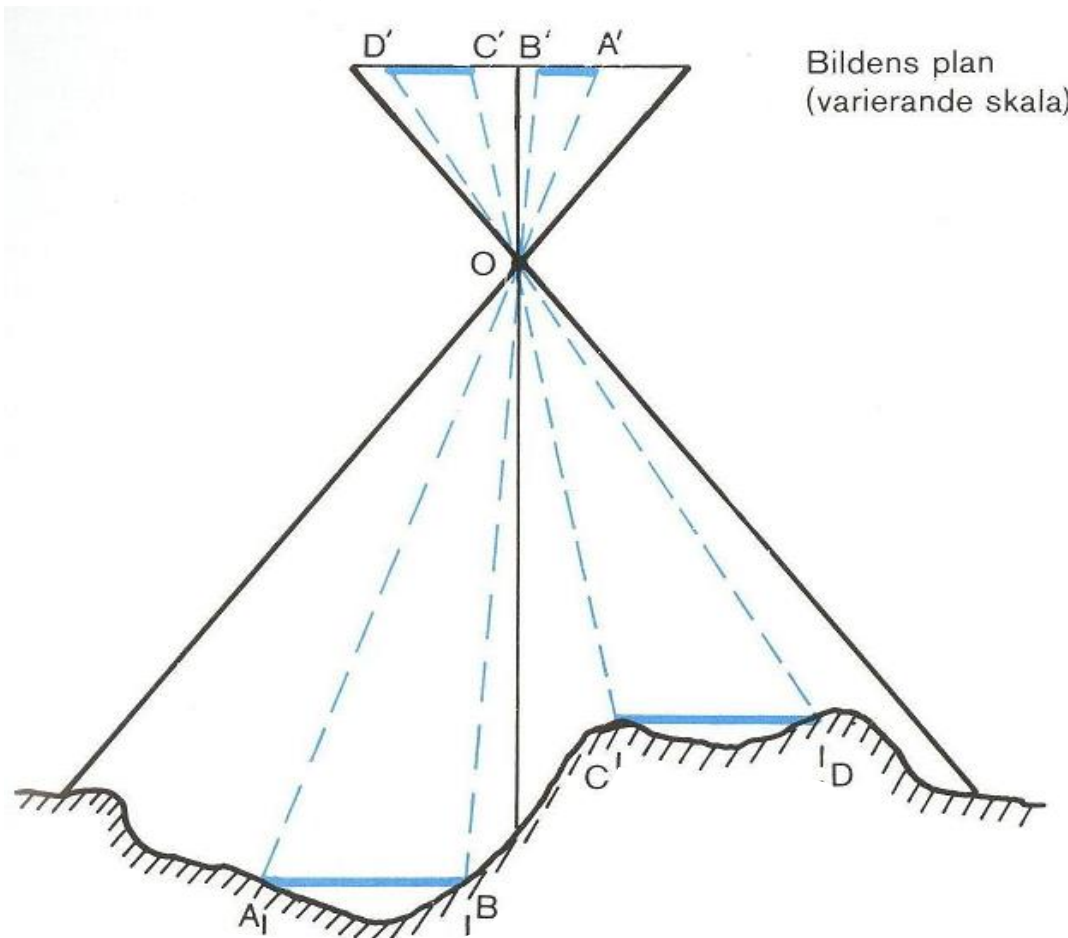
Färgsättning – 1 band per färgkanal Rött, Grönt o Blått



Färgsättning – 1 band per färgkanal Rött, Grönt o Blått



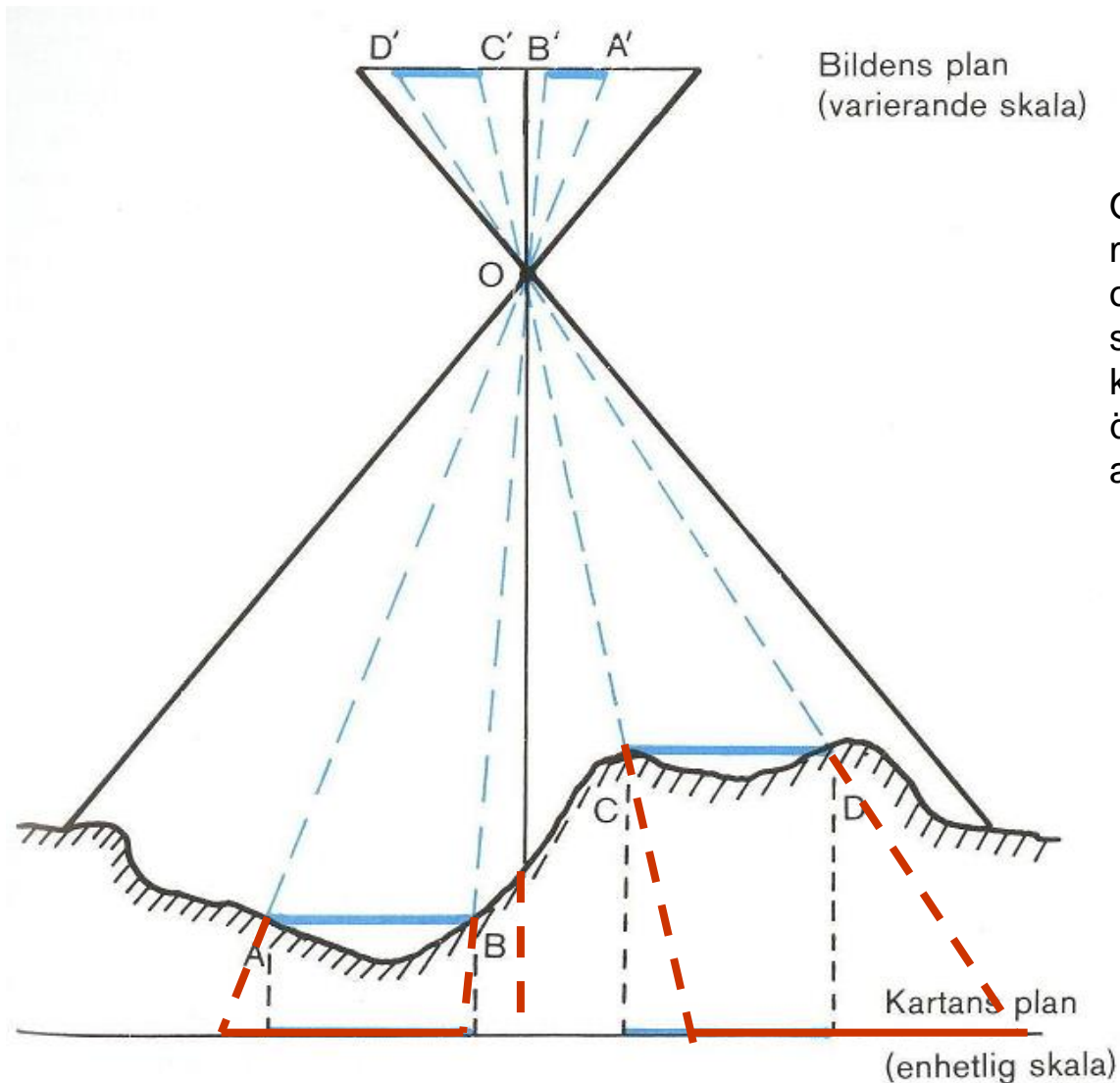
Ortofoto ur flygbilder centralprojektion



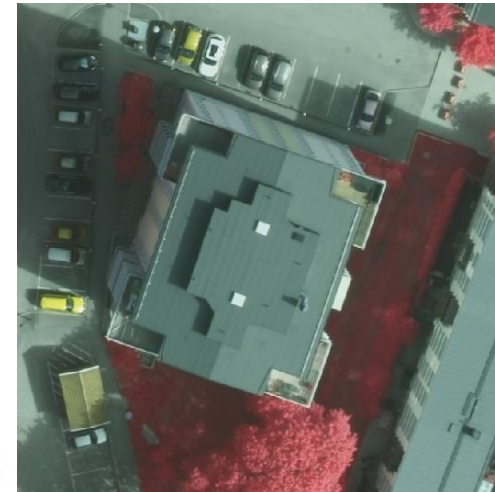
Skalvariationer inom olika delar av en flygbild. DE horisontella avstånden AB och CD är i terrängen lika långa. I flygbilden avbildas däremot CD i större skala än AB eftersom CD ligger närmast kameran. Avståndet $C'D'$ blir därför i flygbilden längre än $A'B'$.

Om bilden

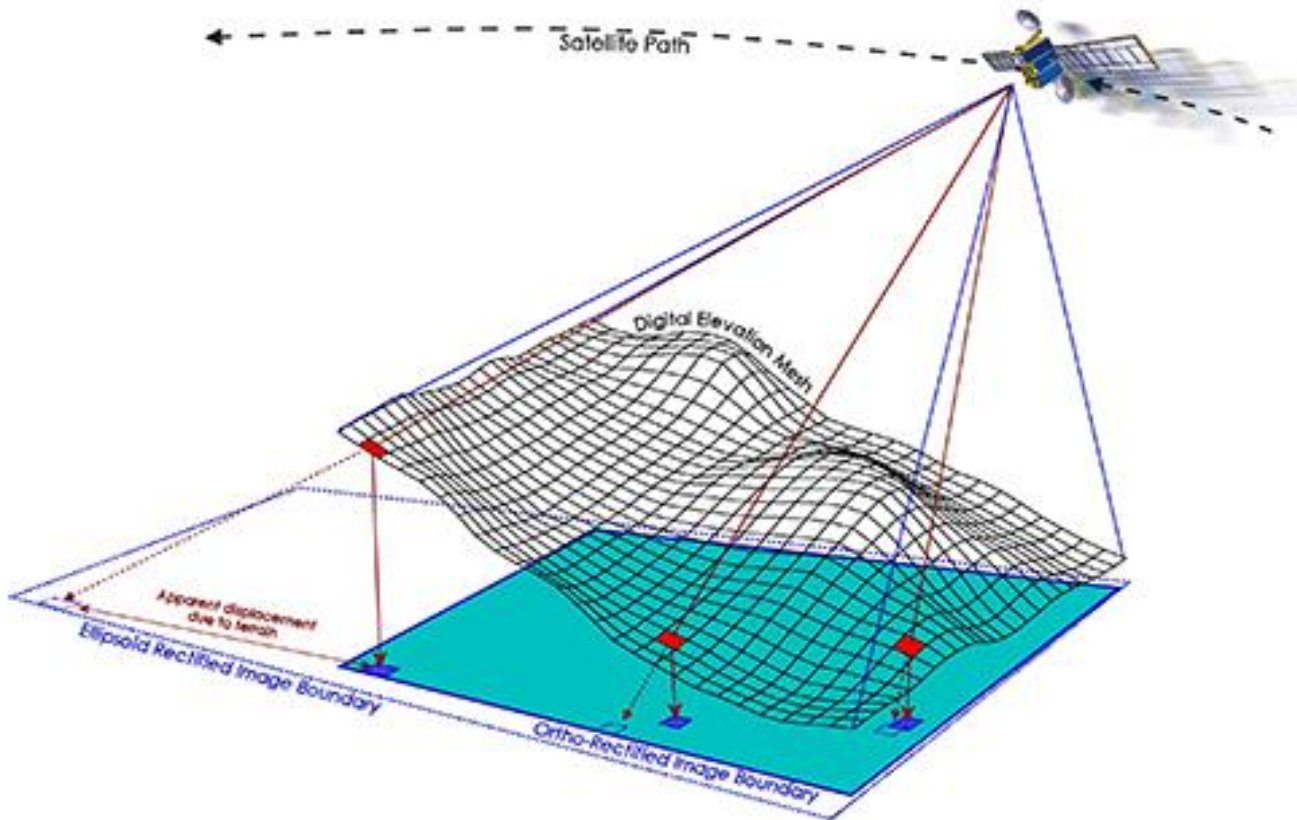
Ortofoto



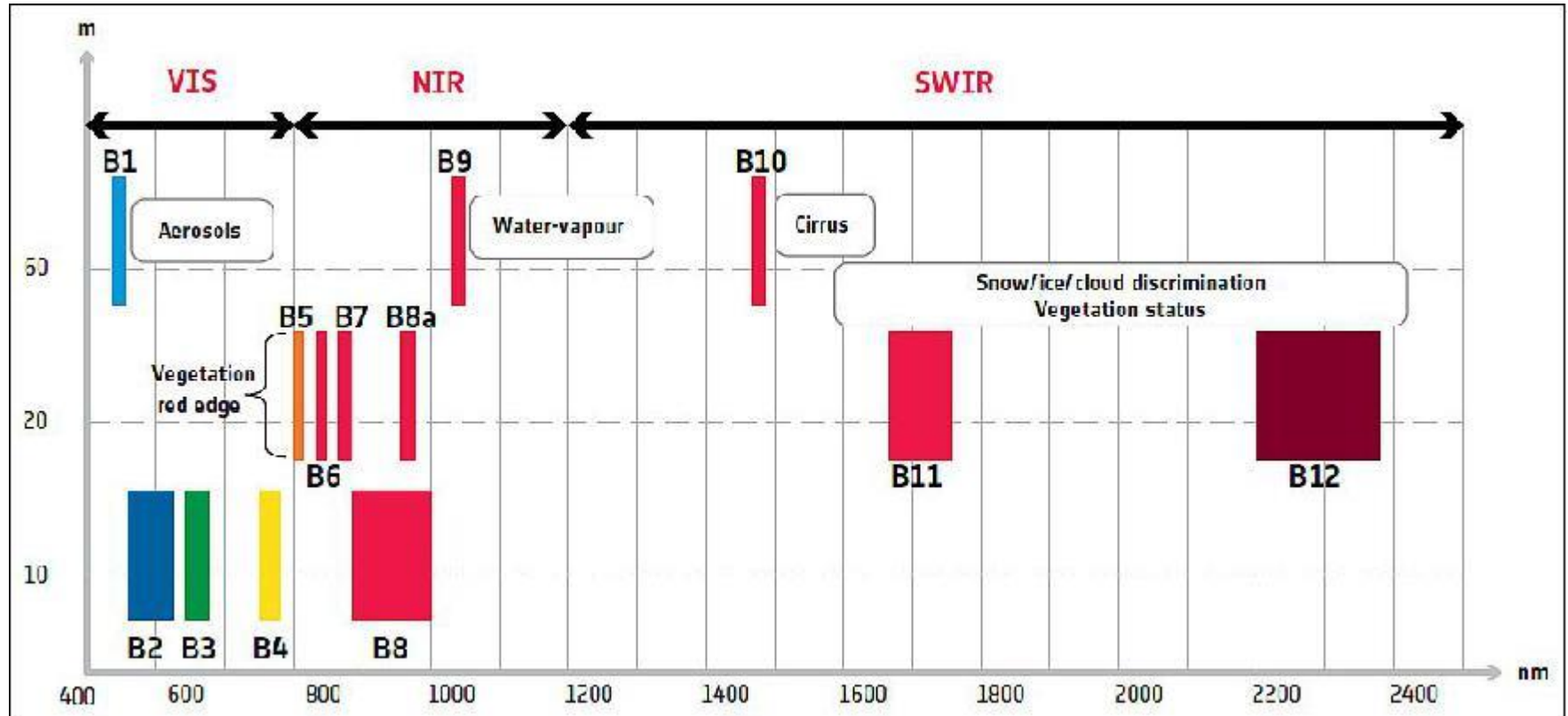
Oftast används en markhöjdmodell för ortorektifieringen. Höga objekt som träd eller byggnader korrigeras då inte för sin höjd över marken. Därför ser de ut att luta i bilden.

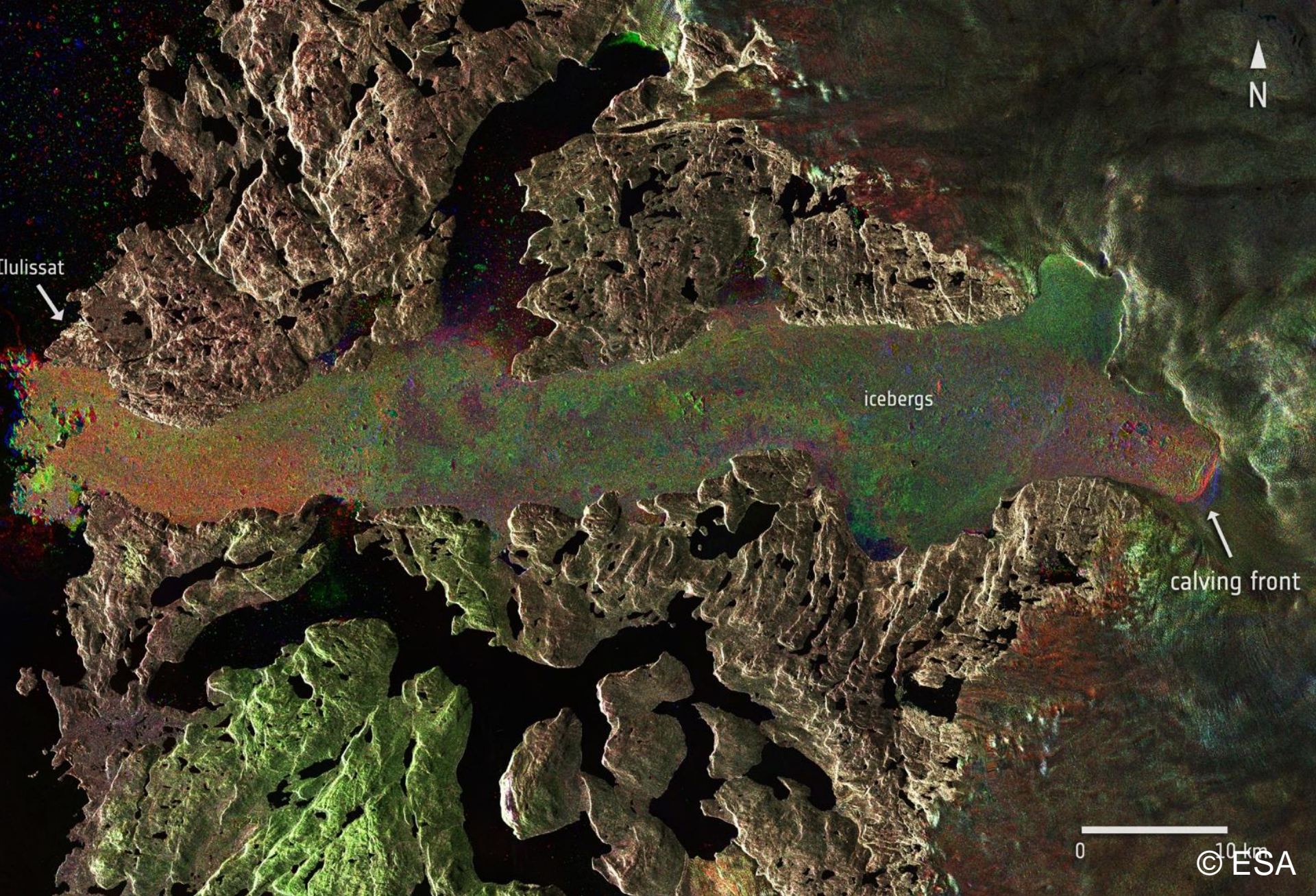


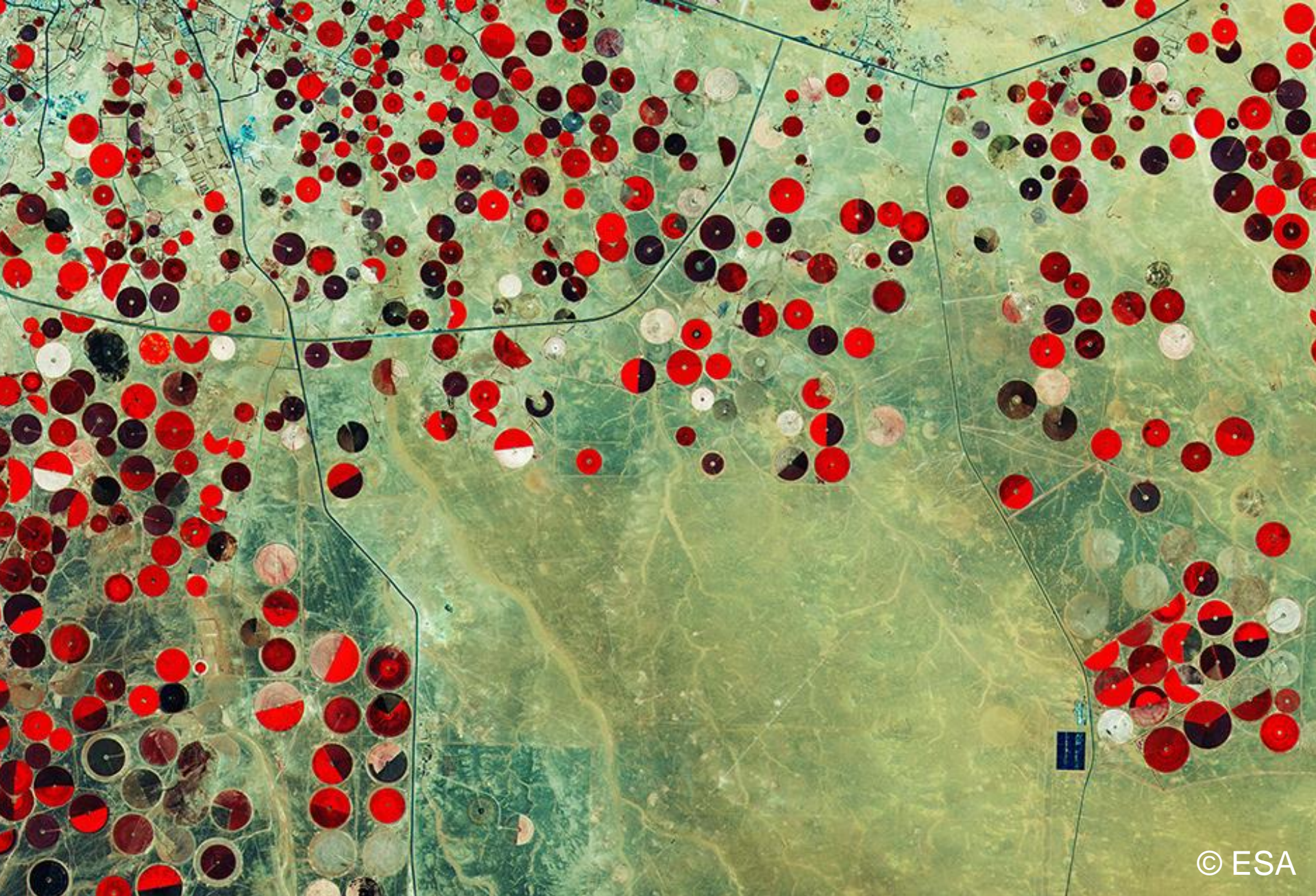
Satellitbilder måste också korrigeras för höjdvariationer



Sentinel-2 spektralband







© ESA





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Swea – swea.rymdstyrelsen.se/portal

The screenshot displays the web portal for Swea (Swedish National Space Board). The browser address bar shows the URL swea.rymdstyrelsen.se/portal/. The page features a navigation menu with items like 'Appar', 'Ansökningar mm', 'KTH Brasilien Curitiba', 'Satellit', 'Projekt', 'Map API', 'Omvärld', 'Prg', and 'eoMapper'. The main content area is a satellite map of Sweden, with a blue rectangular selection box covering a large portion of the country. The map shows various geographical features, including forests, water bodies, and urban areas. The right sidebar contains a search bar, a 'Sökning' button, and a 'Resultat' button. Below these, there is a list of satellite images with their respective IDs and dates. The list includes:

- S2A160823103332T33VWG_S2MSI1C_160824214756 Datum:2016-08-23
- S2A160813103228T33VWF_S2MSI1C_160814173319 Datum:2016-08-13
- S2A160813103228T33VWF_S2MSI1C_160814173319 Datum:2016-08-13
- S2A150704101337T33VWF_S2MSI1C_160809172630 Datum:2015-07-04
- S2A160505103027T33VWF_S2MSI1C_160505205201 Datum:2016-05-05
- S2A160505103027T33VWF_S2MSI1C_160505205201 Datum:2016-05-05
- S2A160505103027T33VWG_S2MSI1C_160505204725 Datum:2016-05-05
- S2A160502102027T33VWG_S2MSI1C_160502190942 Datum:2016-05-02
- S2A160502102027T33VWG_S2MSI1C_160502190942 Datum:2016-05-02
- S2A160502102027T33VWF_S2MSI1C_160502190924 Datum:2016-05-02
- S2A160502102027T33VWF_S2MSI1C_160502190924 Datum:2016-05-02
- S2A150829103028T33VWG_S2MSI1C_160408183145 Datum:2015-08-29
- S2A150829103028T33VWG_S2MSI1C_160408183145 Datum:2015-08-29
- S2A150829103028T33VWF_S2MSI1C_160408183431 Datum:2015-08-29

The bottom of the page features the logo for RYMDSTYRELSEN (Swedish National Space Board) and the text 'Powered by Keystone'.

ESA Scientific Hub

<https://scihub.copernicus.eu/dhus/>

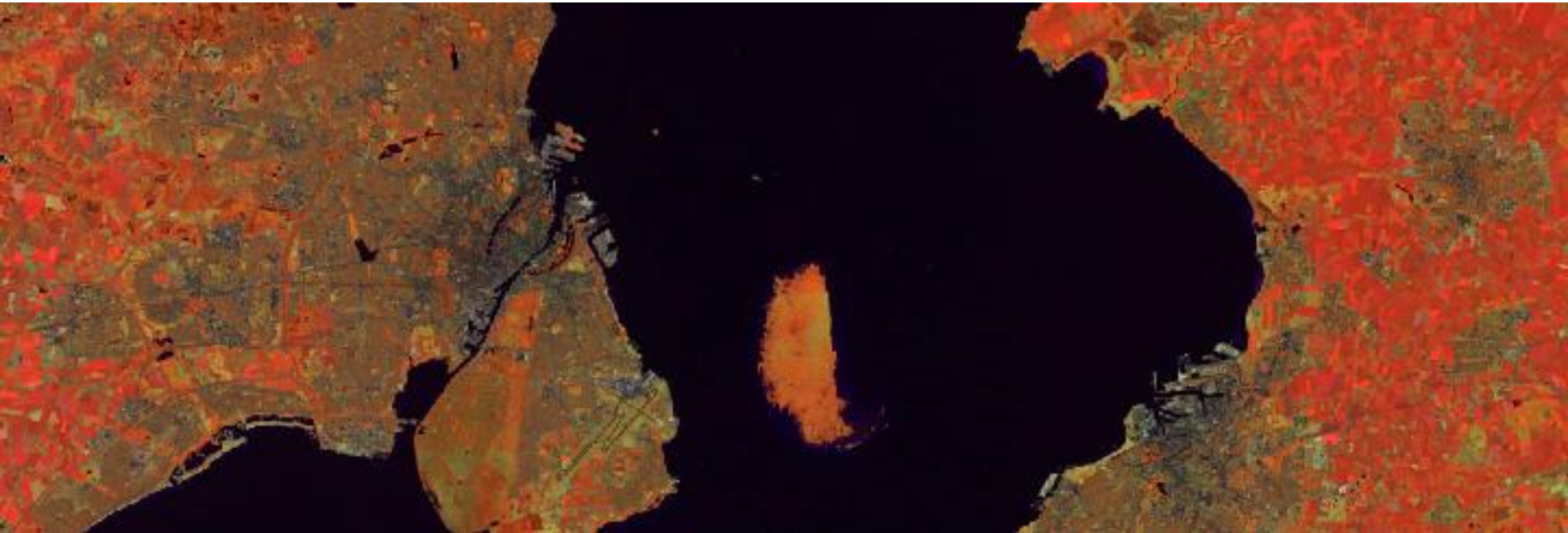
The screenshot displays the ESA Scientific Hub interface. At the top, the URL <https://scihub.copernicus.eu/dhus/#/home> is visible in the browser address bar. The page title is "Sentinels Scientific Data Hub". The search criteria bar contains the product ID: "S2A_OPER_PRD_MSIL1C_PDMC_20160413T134338_R065_V20160412T102058_20160412T102058". Below the search bar, the URL for the product data is shown: [https://scihub.copernicus.eu/dhus/odata/v1/Products\('766dd35b-645e-4a2f-b8f5-ae0b96fc1541'\)/\\$value](https://scihub.copernicus.eu/dhus/odata/v1/Products('766dd35b-645e-4a2f-b8f5-ae0b96fc1541')/$value). The interface is divided into several sections: "Footprint" shows a map of Sweden with a green rectangular area of interest; "Quicklook" displays a satellite image of the same area; "Attributes" provides metadata for the product, including the date (2016-04-12T10:20:58.000Z), filename, identifier, and instrument (MSI). The left sidebar shows a list of search results for "S2A MSI" products. The bottom of the interface includes navigation controls and a "CLOSE" button.

Processnivåer

Level	Description
0	Reconstructed, unprocessed instrument and payload data at full resolution, with any and all communications artifacts (e. g., synchronization frames, communications headers, duplicate data) removed.
1a	Reconstructed, unprocessed instrument data at full resolution, time-referenced, and annotated with ancillary information, including radiometric and geometric calibration coefficients and georeferencing parameters (e. g., platform ephemeris) computed and appended but not applied to the Level 0 data (or if applied, in a manner that level 0 is fully recoverable from level 1a data).
1b	Level 1a data that have been processed to sensor units (e. g., radar backscatter cross section, brightness temperature, etc.); not all instruments have Level 1b data; level 0 data is not recoverable from level 1b data.
2	Derived geophysical variables (e. g., ocean wave height, soil moisture, ice concentration) at the same resolution and location as Level 1 source data.
3	Variables mapped on uniform spacetime grid scales, usually with some completeness and consistency (e. g., missing points interpolated, complete regions mosaicked together from multiple orbits, etc.).
4	Model output or results from analyses of lower level data (i. e., variables that were not measured by the instruments but instead are derived from these measurements).

Level 1C – ortokorrigerat, på ESA SciHub till UTM
På CGSS till Sweref99TM, RT90, 12 lokala Sweref-system

Styrkan i tidserier



Tillämpningar

- Väderprognoser
- Vegetationsstudier
- Multitemporala studier
- Skördeprognoser
- Vattenkvalité
- Skogapplikationer/
hyggesavverkningar
- Miljöövervakning
- Förändringsanalyser
- Infrastruktur
- DEM
- Kartering av snö/is
- Väderprognoser

Copernicus

- Land Monitoring
- Marine Monitoring
- Atmosphere Monitoring
- Emergency Management
- Security
- Climate Change

Land Monitoring

- Land Cover, Use and Change detection Mapping
- Bio-Geophysical Variable Mapping
- Risk Mapping
- Precision Farming
- Forest Monitoring
- Desertification
- Snow and Ice

© ESA

Marine Monitoring



MARITIME SAFETY



MARINE RESOURCES



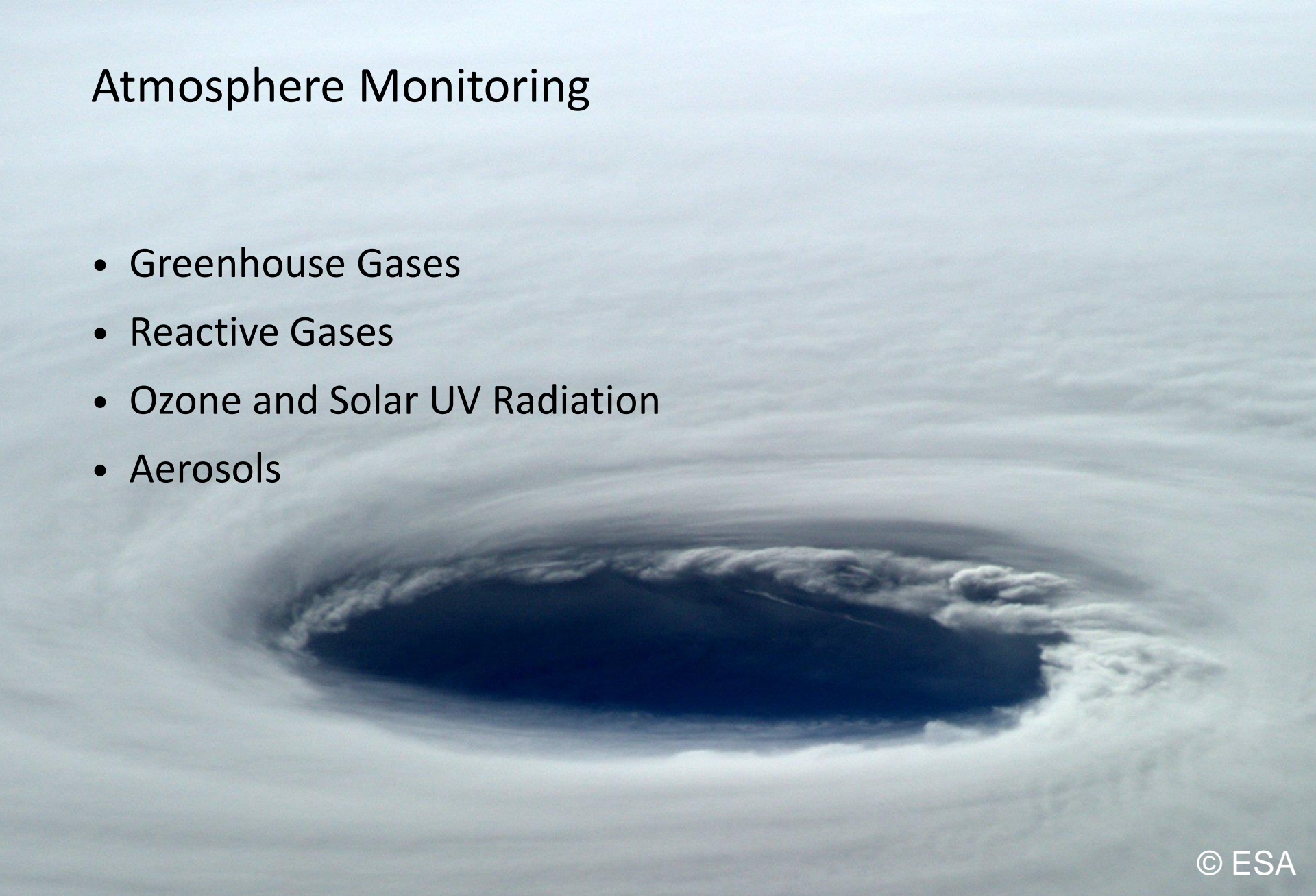
COASTAL AND MARINE ENVIRONMENT



WEATHER, SEASONAL FORECASTING AND CLIMATE

Atmosphere Monitoring

- Greenhouse Gases
- Reactive Gases
- Ozone and Solar UV Radiation
- Aerosols



© ESA

Emergency Management

- Floods
- Forest Fires
- Landslides
- Earthquakes & Volcanic Eruptions
- Humanitarian Crises
- Oil Spills

© ESA



Security

- Border Surveillance
- Maritime Surveillance
- Support to European External Action

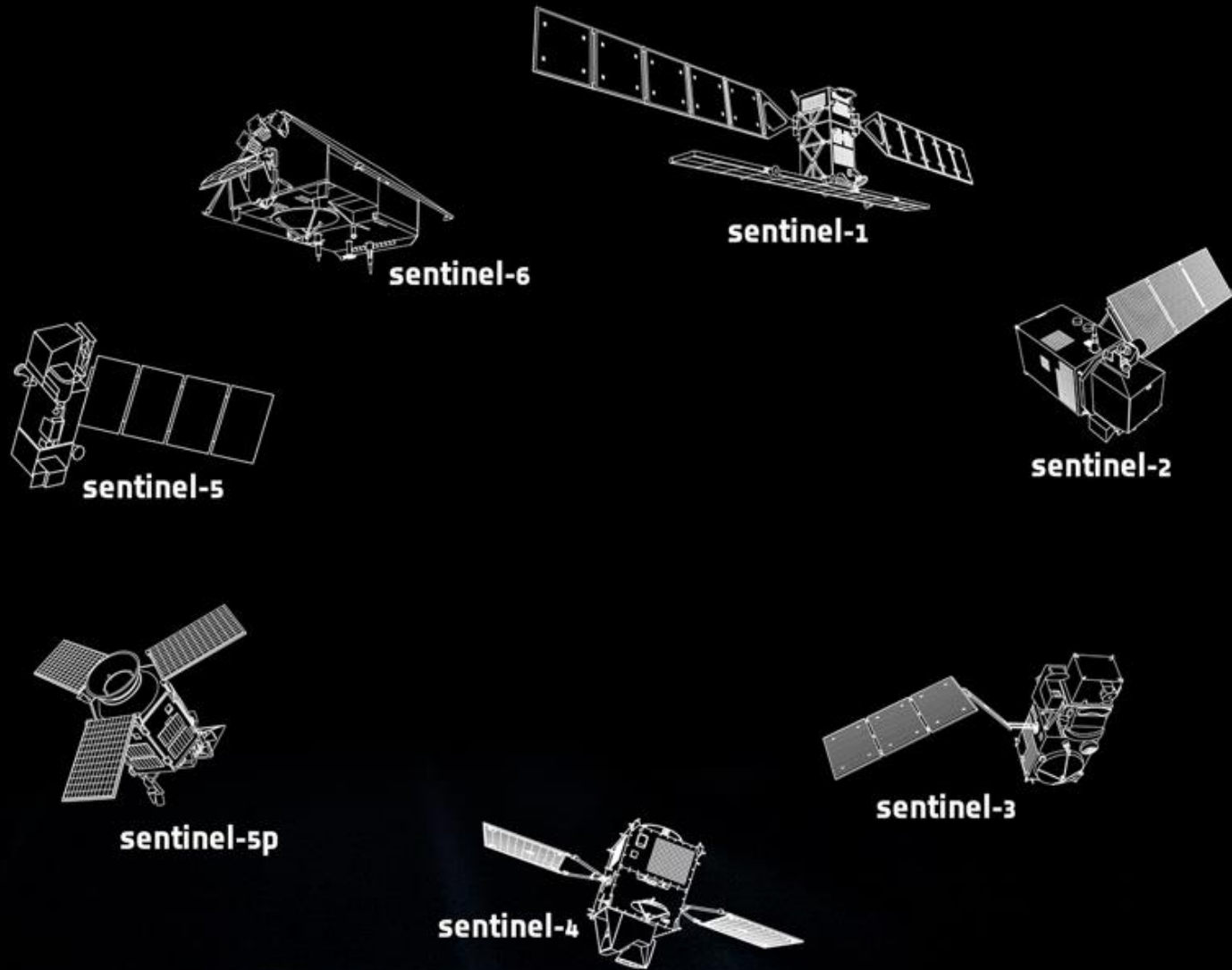
© ESA

A satellite image of Earth showing a large ice sheet, likely in Antarctica, with surrounding landmasses and oceans. The image is used as a background for the slide.

Climate Change

- Land Monitoring
- Marine Environmental Monitoring
- Atmospheric Monitoring

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Copernicus: Med blicken mot jorden!

Välkommen till två dagar, 10–11 maj, med föredrag, workshops och goda exempel med fokus på hur man kan använda data och information från Copernicus-programmet inom:

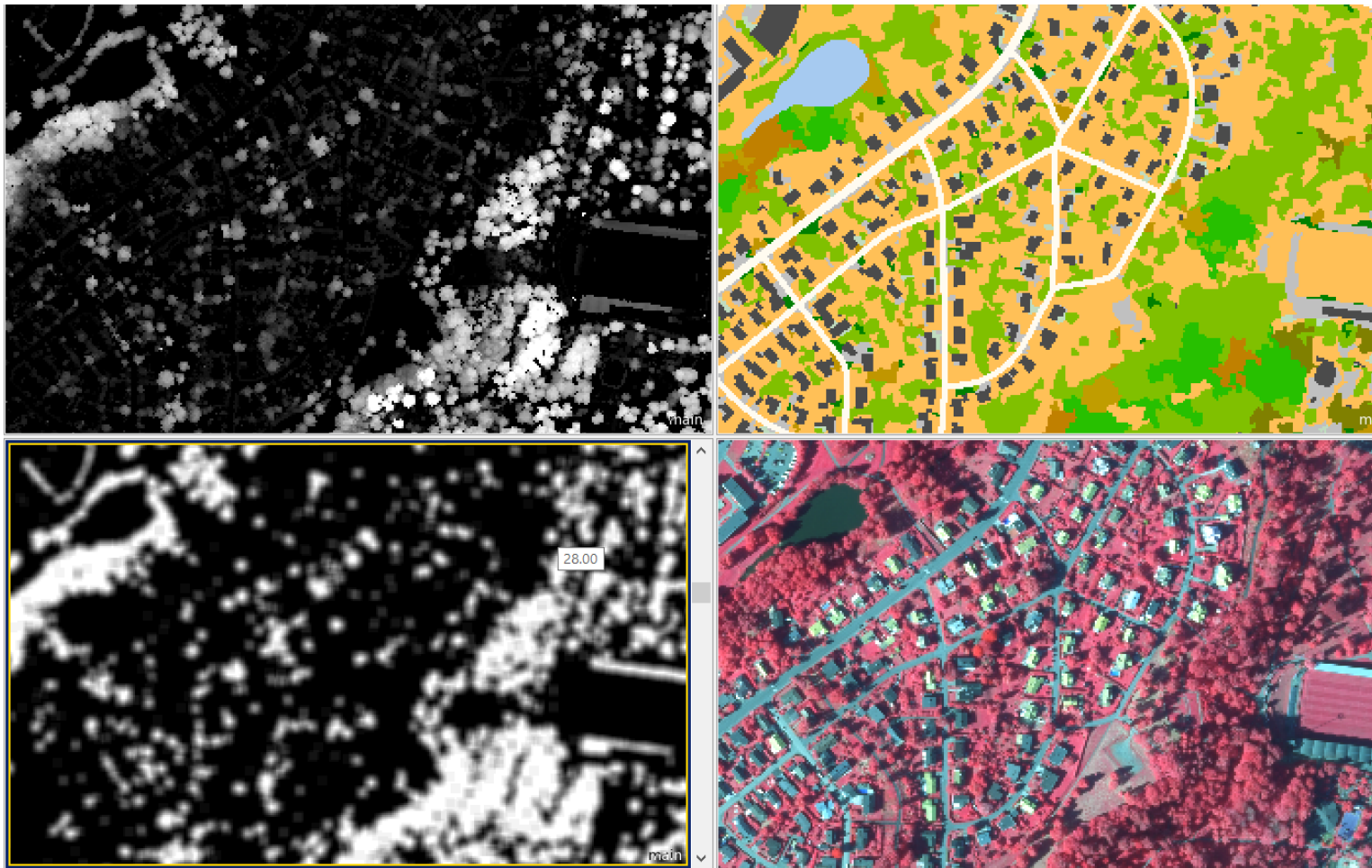
- Landmiljö
- Marin övervakning
- Katastrof- och krishantering
- Klimat

Vi sätter även fokus på hur lokala/regionala myndigheter drar nytta av Copernicus och ger exempel på hur GIS-specialister använder Copernicusdata. Vi presenterar nya tjänster och visar nya dataportaler.

Anmäl dig senast 3 maj: workshop.copernicus.eu/sweden-infosession

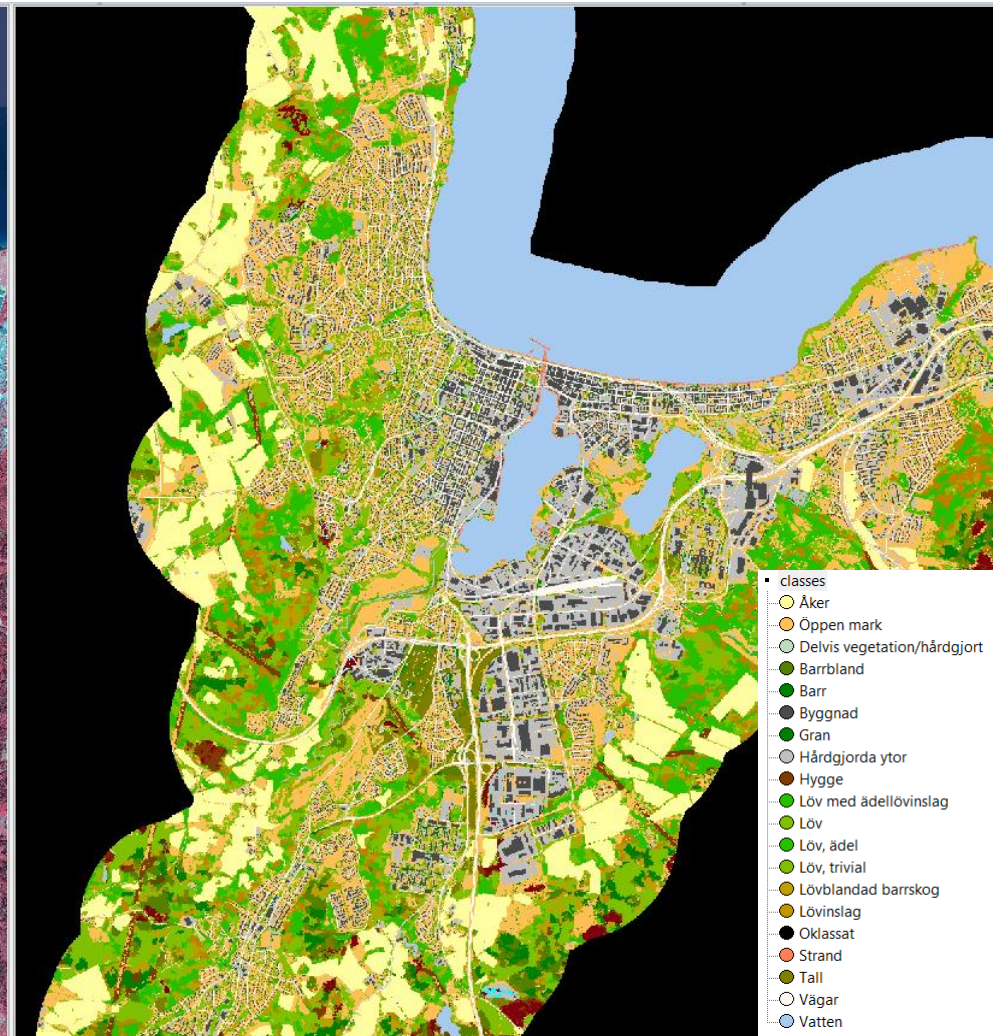
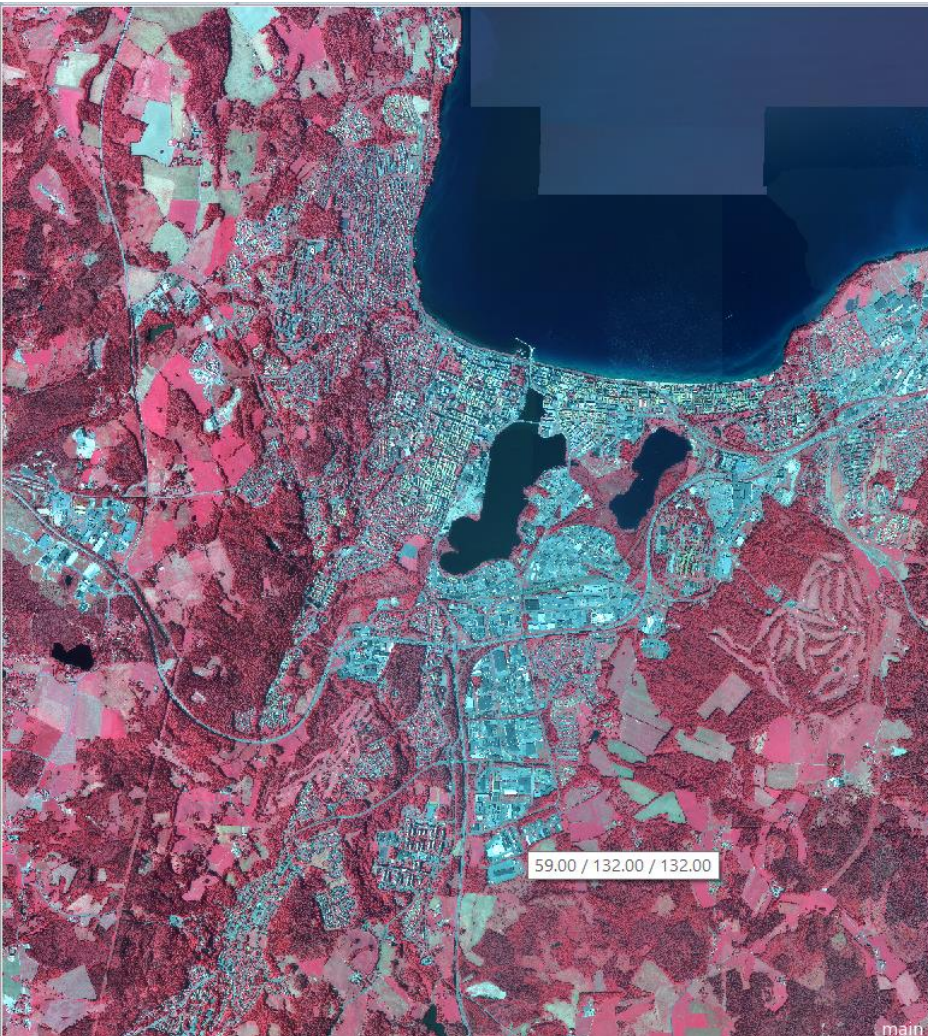


Exempel Vegetationskartering

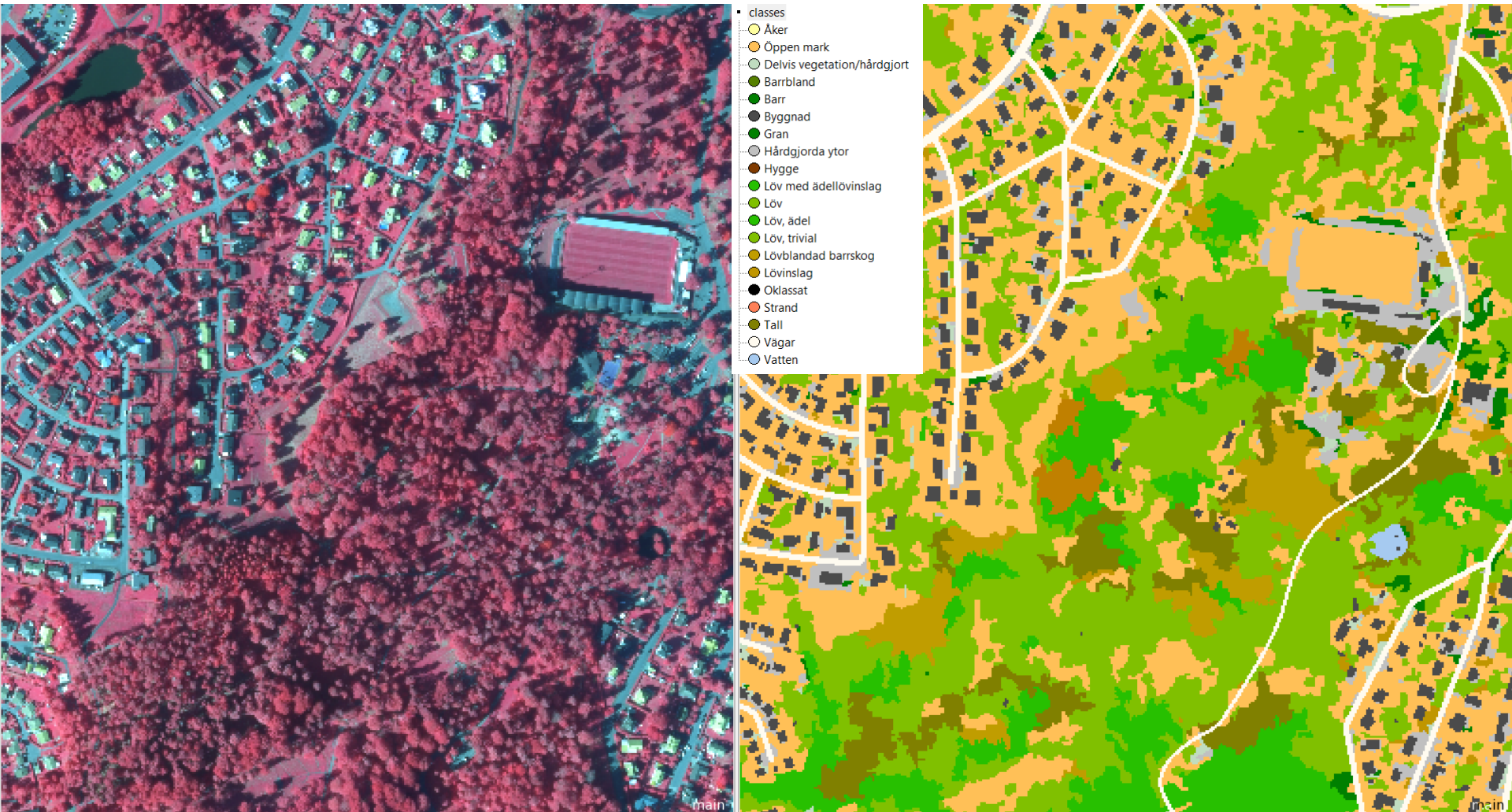


- Objektshöjder ur laserpunktmoln 2m upplösning
- "Krontäckning" – andel höjder $> 5\text{m}$ inom 10m-ruta

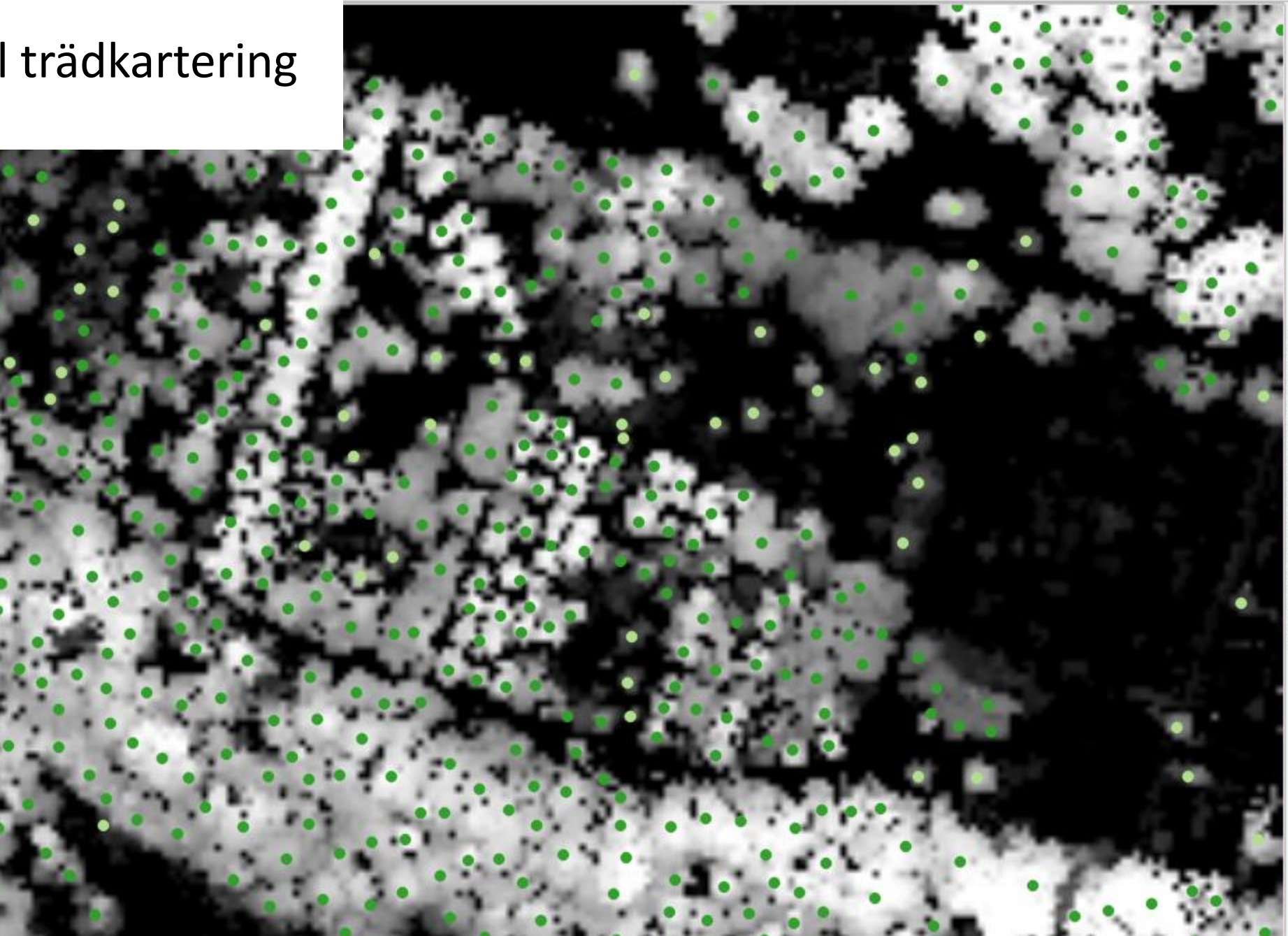
Vegetationskartering Jönköping



Vegetationskartering Jönköping



trädkartering





Navigation and layer control panel on the right side of the map interface. It includes a search bar at the top, a list of layers with expand/collapse icons, and a vertical scroll bar.



GEOGRAFISKA INFORMATIONSBYRÅN

