

# National Mapping Agencies

Break-out session

Workshop Preparation for Sentinel-2 in Europe

# Quick background from persons present of organisation in their countries:

- Sweden NMA: responsible for Geospatial Data (via an established network of authorities working nationally). Sat. Data is also geo, but until now have no specific authority with responsibility for this data within the organisation. Swedish National Space Board recently designated lead (with support from NMA).
- Sweden Space Agency: ground segment responsibility (financed by multiple agencies including Met Office).
- Poland NMA: there is no use of Sat. Data within the NMA activities, but are interested in developing potential. There is no central authority responsible for this data.
- Estonia NMA: responsible for INSPIRE and major spatial data provider. Will also host the National Mirror site (via a commercial organisation) in order to support commercial applications.
- Switzerland: no use of Sat. Data in NMA operations mainly due to licence restrictions. Have a mandate to support Swiss clients in their use of Sat. Data (e.g. Swiss engineering company working on dams in Africa etc.). Scientific support from Zurich Uni. Mandate to also promote use of Sat. Data nationally. Swiss Space Office provided that mandate.

- Norway (space centre): Not part of EU and therefore role within Copernicus not guaranteed. Required wide internal stakeholder engagement on the benefits – gained wide motivation. Min. of Trade & Fisheries (hosts Space Agency) responsible for implementation. Different roles for different actors – NMA are crucial part. Negotiations underway on collaboration.
- Norway (NMA): do not imagine to be a core user of S2 data, but do have a coordinating role in NSDI and therefore will need a model to handle this big data element. Therefore a stakeholder and specification in services of Ground Segment services.
- Germany NMA: technical coordination point of land monitoring service of Copernicus with collaboration with Env. Agency. Undertaking research on VHR for statistical classification of land-use (want to use LUCUS/Nominstat classes – no other source for supplying data to EU). Also interested in using S1 and S2 for completing cloud free coverage. Want to provide web services for promotion of services.
- UK NMA: little interaction with Copernicus leads (policy: Defra [Min. for Environment] and facilitation: UK Space Agency)

# Question 7:

- Ability to provide in-situ data when data licences provide a block. A real problem is use of 'local' DEM that is appropriate for the country (and better resolution of ESA offering).
  - Sweden: national public access contract to all geospatial data and therefore do not consider licence as such an issue
  - UK: very complex public/private licence of data, but NMA choosing to ignore issue (assumption that it will be resolved!) and focusing on how to support the use of Sat. Data with in-situ technically.
  - General discussion on the ultimate aim of open data to ease the supply of data between users. Dangers of substitution of alternative sources over what is offered by NMA (may also wider benefits – temporal frequency!).

# Question 1:

- Quality of data has improved significantly – however unrealistic demands placed on sector (in terms of resolution and ‘cloud free’ ability to get suitable coverage). Also ‘thinking’ has been dominated in terms of ‘mapping’ rather than thinking about appropriate use of technology: i.e. more focus on monitoring not mapping (i.e. snap-shot in time vs. complete coverage at defined scales/resolutions).
- Is the NMA responsible for these things or the agencies that are ‘end-users’? Who provides the requirements and who provides the utilities? How to involve private partnerships? E.g. in Sweden commercial companies have ‘large area’ interests. Need to find ways to accommodate a wider range of end-users.

# Question 2

- Norway: to produce statistical data (2003 – 12) using S2 (vegetation change) with cadastral data. Is it possible to identify change, when development has started. Following the building construction activity (e.g. similar to German “Building Radar”).
- Sweden: not currently using S2/S1 data for this purpose but interested in developing databases to support these uses (to meet other agencies responsibilities/requirements): SACS(?) database (to be transferred to National Space Board when CGS is set-up – and supported by contractors). Thus activity is moving to the ‘users’. Sweden has number of examples of long-time series:
  - Sweden e.g. long-term study – on forestry clear cuts and monitoring progress of notifications/clean-up/replanting (15 years). Data not used in Topo Map. (not NMA – national forest agency / environment agency)
  - Sweden: integration of all available sat data in a 10 year (every 3yr? In order to get cloud free [SPOT] cover) HR data cover. S2 will improve re-fresh rates.
  - Sweden: identification of older woodland (60 year archive – combined of aerial, SPOT, etc.). Not automated. Identifies ‘touched’ woodland and removes for ‘ancient tree layer’.
  - Note: global ancient forest research – with a visualisation tool (slider bar) to see change (illegal logging impacts etc.)
- Estonia – suffers illegal forestry, and does monitor (but from aerial imagery not sat. data)

- Switzerland: identified that if use of Sat. Data is to be used then automated processes are a must. However this required a mind-set change from 'definitive' mapping to probability mapping (100% certainty that a forest is there – not 95.5% that this is polygon is a forest). It is noted that a map is not 'right' (cartographic constraints, simplified representation, age) but it is deterministic – not process. Will require 'training'.
- Benefit in 'extrapolated' values (from Sat. Data) between NMA change. Or use of Sat. Data to identify change ("trend scouting") to drive allocation of resources (or to identify 'no change' areas – no change being easier to identify!)
- Norway: finances international 'Redd+' programme (rainforest monitoring) (US\$M! Also UK, Germany). What other support can CGS provide to international programmes?

# Potential Research Tasks

- Issue of promoting use of sentential data:
  - Automation (requires geometric accuracy – use of appropriate DEMs). Note: SRTM stops at 60 deg. North. Requires appropriate data for ESA (Nordic Level Cooperation)
  - Cloud cover (use of every cloud free pixel!) – data at right time of year (winter/leaf off vs. leaf on).
  - Atmospheric correction (big changes addressed with haze, precise things such as leaf area/health/vegetation etc. needs greater work. Note that correction also removes ‘bright’ targets [roads/sand/etc.] and therefore are issues to resolve).