Conclusions and recommendations of the conference
Valuing and managing biodiversity: the added value of satellite applications
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Context

This conference brought together 130 participants.

Its objective was to evaluate how well investments the development of satellite applications have translated into operational, useful tools for end-users – decision-makers and environment professionals working for local and regional authorities in Europe.

Exchanges focused on testimonials from confirmed end-users from regional administrations, who described their experience in implementing such tools for environmental management, and provided feedback on obstacles and opportunities they encountered.

Finally, representatives of the space and geographic information communities have presented several support mechanisms available for users, in various European countries.

Conclusions and recommendations

On regional administrations' awareness and progress in taking-up satellite services

Pioneering local administrations have demonstrated an established and routine capability to use satellite services for environmental management. However, it was agreed that the number of regional authorities who use satellite applications operationally, or who are in the process of evaluating and implementing such applications, is limited for now.

Pre-operational or operational end-users became aware about the possibilities of satellite applications via the following channels:
- peer-to-peer sharing of experience between confirmed and potential end-users, during workshops and conferences
  - *e.g. Norfolk County Council*

- cooperation with value-adding companies who are able to offer operational satellite services beyond the R&D phase of projects
  - *e.g. Regional Directorate for the Environment of Alsace, France;*
  - *Countryside Council for Wales, UK*

- proximity and cooperation with industrial clusters and/or universities and research centres
  - *e.g. Guyane Mining Observatory*

However, some regional authorities interested in satellite services found it difficult to find clear information about:
- the value for money of satellite services compared with traditional tools
- the experience of confirmed users from other local authorities elsewhere in Europe
- the relevant service providers
- the organisations that could provide further, neutral information about the topic

Cost-benefits analyses have not been made yet that fully take into account the economic and environmental impact of using satellite applications, across the user organisation and across the range of stakeholders who can benefit.

Given the lack of information available, some regional authorities found the evaluation and the decision-making process very complex, involving many uncertainties in terms of expected results, resources, and sustainability of the services.

On the effectiveness of funding mechanisms in encouraging take-up

For the end-user experiences presented at the conference the EC's INTERREG funding mechanism was the most successful in stimulating regional administrations to explore pioneering, operational solutions.
e.g. INTERREG projects ARCH, Coast Alive!, RINSE, CORDIALE etc.

R&D funding mechanisms are less end-user-centric, and focus less on operational services. They allow service providers to test applications from a technical point of view. They seem to be also successful in terms of end-user take-up when they help the end-users respond to statutory requirements.
e.g. Countryside Council of Wales, UK and *Regional Directorate for the Environment of Alsace, France*

Free satellite data VS end-user-friendly maps

On one hand it has been recognised that free satellite data helps overcoming a financial obstacle to a wider take-up of satellite services. On the other hand it has been acknowledged that <u>most regional authorities do not have internal competences to interpret raw satellite data</u>, to integrate it with other sources of information, and produce finished services – maps – ready to integrate in their geographic information systems. From that perspective, pushing satellite data to end-users entails the risk of a counterproductive compartmentalisation of the technology offer (satellite VS aerial).

Furthermore, it was agreed that local information and field expertise are resources that exist in every region, but are possibly not recognised as fully as they could be, and used to create integrated services, notably for solid, repeatable and consistent change monitoring.

Indeed, despite a natural inclination of technologists to head towards a rigorous science solution and improvements in sensor technology through R&D, the limitations of sensor technology are not necessarily currently the main obstacle to operational and relevant services for the end-users. A lesser level of precision complemented with interpretation based on local information and field expertise may be what the end-user needs and may be consistent with uncertainty levels agreed with the end-user.

Several public and private initiatives provide free data or facilitate end-users' access to data and several countries have also included an interface in their support programmes to act creatively between the end-user and the earth observation technologists.

e.g. the Geosud Project by UMR Tetis, the *Satellite Applications Plan by the Ministry of the Environment in France; the national satellite data warehouse in the Netherlands; the Integrated Applications Programme* by the *European Space Agency* etc.

Data centres and mapping projects on a European and national level are often not aware of the existing knowledge and capabilities on a regional level, therefore, rarely taking into account or integrating environmental and geographic information from a regional level.

Recommendations

- Support programmes and free data for the end-users should be encouraged, as they help end-users overcome a financial obstacle (the cost of data).

- However, it must be better recognised that satellite data is not usable, as such, by the end-users. Furthermore, pushing satellite data to end-users leads to a counterproductive compartmentalisation of the technology offer (satellite VS aerial) instead of more relevant integrated services that rely on many sources of information, especially the existing ones at a local level.

- Set-up of support mechanisms for end-users should follow the pioneering examples presented during the conference, that accompany the end-users during the procurement of integrated, operational services.

- Up-flowing, locally- and regionally-sourced environmental and geographic information should be integrated into national and European databases, in accordance to the INSPIRE Directive.

  e.g. the Regions of Nord-Pas de Calais and Kent are willing to make available the in-depth trans-regional habitats map done within the ARCH project.

- Regional administrations should encourage citizen and stakeholder participation in data collection and building of their spatial data infrastructure, for instance by capitalising on the boom in mobile devices equipped with satellite navigation capabilities, through user-friendly apps.