Polish contribution to «Copernicus»
European Earth Observation Programme

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History

1998 Bearch of GMES - Baveno Manifesto
2006 European Commission creates GMES Bureau
2007 Announcement of European Space Policy with GMES as a flag program
2008 First pre-operational services
2012 European Commission renames GMES to COPERNICUS
2014 First operational services
<table>
<thead>
<tr>
<th>Services</th>
<th>GIO</th>
<th>FP7</th>
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</thead>
<tbody>
<tr>
<td>existing (*) being defined (**)</td>
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<td>Milieu marin (*)</td>
<td>Earth (*)</td>
<td>Sea (*)</td>
<td>Climate (**)</td>
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<td>Atmosphère (*)</td>
<td>Emergency (*)</td>
<td>Atmosphere (*)</td>
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<td>Security (**)</td>
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Now there are similar services but:

- there is not continuity
- For example satellites are not renovated

Copernicus will change it, ensuring:

- continuity of services
- renewing satellites (Sentineles)

It will be first such program in the world.
Sea

« SSALP/Duacs »
→ CNES/CLS

« CORIOLIS »
→ IFREMER

MERCATOR
Society

MyOcean
iPhone Application
Polish contribution to COPERNICUS
(some examples)

- Support to Climate Change Initiative
- Support to Soil Moisture Essential Climate Variable (ECV)
- Support to Natural Emergency Services
- Support to Drought Detection and Monitoring activities
- Support to efficient use of Sentinel 1 and 2 satellites data
Usefulness of EO Based Methods and Products for Polish Science and Economy

1. Effective use of land cover maps in physical planning at regional scale

2. Effective use of information for proper agricultural management:

3. Effective use of EO-based information for water management:

4. Monitoring of Protected Areas:
   - NATURA 2000
   - national and landscape parks
   - High Nature Value Areas including the phenology trends

5. Renewable Energy:
   - monitoring of energy crops – biomass assessment
Examples of products which will be used in COPERNICUS Services

- Land cover map
- Soil moisture map
- Crop condition assessment
- Estimation of flood extent in 2010
- Prognosis of yield reduction – April 21, 2012
Compact imaging spectrometers for small satellite missions

Imaging hyperspectral spectrometers (IHS)

Heritage

1. IHS for UAV
   spectral range  \(0.4 - 1.1\ \mu m\)
   spectral resolution  \(\Delta \lambda = 2-3\ nm\)
   mass  8 kg

2. IHS for BEPI Colombo mission experiment MERTIS
   (cooperation with DLR Berlin)
   spectral range  \(7 - 14\ \mu m\)
   spectral resolution  \(< 200\ nm\)
   mass  3 kg

3. Multispectral spectrometers for ground measurements

4. Thermal cameras
Vistula Lagune on Baltic shore
*View from space*
Thank you!