DLR’s Activities to Support the GEO Supersite Initiative with TerraSAR-X Data

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Overview

- GEO / ESA Supersite initiative
- Support by TerraSAR-X project
- Scientific results
- Recommendations by TerraSAR-X project
TerraSAR-X Constraints

- Public Private Partnership Mission
  - Not to impair commercial rights and interests of ASTRIUM GEO Services

- German Satellite Data Security Act
  - Keep control in DLR over who is using which data

- No project funding for GEO activities

- KISS: Use of well established TerraSAR-X Science Service System mechanisms
TerraSAR-X Project Implementation of Supersites
### TerraSAR-X Supersite Activity

<table>
<thead>
<tr>
<th>Regular Sites</th>
<th>Acquisition Proposal / PI</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tokyo-Mt. Fuji</td>
<td>???</td>
<td>?</td>
</tr>
<tr>
<td>Vancouver-Seattle</td>
<td>??? / H. Dragert</td>
<td>?</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>GEO0895 / P. Lundgren, USGS</td>
<td>+</td>
</tr>
<tr>
<td>Istanbul</td>
<td>GEO0988 / Z. Cakir, TU Istanbul</td>
<td>?</td>
</tr>
<tr>
<td>Hawaii</td>
<td>GEO0875 / M. Poland, USGS</td>
<td>+</td>
</tr>
<tr>
<td>Etna</td>
<td>GEO0891 / E. Sansosti, IREA</td>
<td>+</td>
</tr>
<tr>
<td>Vesuvius / Campi Flegrei</td>
<td>??? / S. Borgstrom / Minet, DLR</td>
<td>?/+</td>
</tr>
</tbody>
</table>

### Event Sites

<table>
<thead>
<tr>
<th>Event Sites</th>
<th>Acquisition Proposal / PI</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haiti</td>
<td>MTH1131 / Eineder, Minet, DLR</td>
<td>+</td>
</tr>
<tr>
<td>Wenchuan</td>
<td></td>
<td></td>
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<tr>
<td>Eyjafjallajökull</td>
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<tr>
<td>Sendai</td>
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</table>
DLR – ITD Special Action for Event Supersite “Sendai”

- Acquisition of TerraSAR-X data and distribution via UNAVCO / ESA server
  - Reference data (before event)
  - 3 month time series after event
  - 17 scenes in total
Sendai Data Website / Data Requests 2011

Handling of event supersites after phase of public interest and return to normal work?
Selected Results Provided by TerraSAR-X Supersite Investigators
Sendai: displacement map

N. Yague-Martinez, et al. DLR/Starlab
See talk Wednesday 15:20 h
Mt. Etna

Descending Orbits
Time Interval: Sep 2008 – Dec 2009
27 acquisitions
76 interferograms

E. Sansosti, IREA
Kīlauea Caldera

Summit eruptive vent

Halemaʻumaʻu Crater

Summit eruptive vent instability

spatial resolution: ~3 m

N. Richter, M. Poland, USGS
N. Richter, M. Poland, USGS
Tohoku-Oki earthquake event Supersite

Colorsce 3 m

Pixel tracking offset of M 6.6 aftershock of April 11

Image from 17 March & 19 April ‘11

E. Fielding, JPL
Turkey: Proposed TerraSAR-X Coverage

GEO Plenary: in November 2011 in Istanbul
→ Development of the Turkey Natural Laboratory
Summary

- Well working system in TerraSAR-X project established to support GEO Supersites
- Most Supersites well established for TerraSAR-X
- Efforts and co-operation from PIs and DLR required to maintain data acquisition
- Number of Supersites needs to be kept manageable