NATIONAL REPORT ON REMOTE SENSING ACTIVITY IN ITALY

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ABSTRACT

In Italy the Remote Sensing activity started in 1970. Actually it is strongly developed in private or public organisations, such as University, National Research Council or industries; also the education and training in Remote Sensing is well distributed in the peninsula offering official or private courses. A non profit Association (A.I.T.) collects practically all the operators in the country, individual members or groups; since 1998 exists a Federation (ASITA) which groups together the societies of Photogrammetry and Topography, Cartography, Remote Sensing and GIS.

1) History

In Italy the first group operated since 1970, mixed University and National Reserch Council (CNR), in Milano and the first works were on thermal infrared aerial surveys over italian volcanic areas. Then the people involved in Remote Sensing increased rapidly mainly in Milan, Florence, Neaples, Bari, Venice, Rome. In the 1978 two Remote Sensing societies were founded, SITE in Milan and AITA in Florence, merging then in the AIT (1986). The Italian Remote Sensing Association (non profit, scientific) collects practically all the private or public operators. In the 1998 in Italy four Associations decided to join themselves in a National Federation (ASITA, acronymous of “Federazione delle Associazioni Scientifiche per le Informazioni Territoriali ed Ambientali”); the four Associations are:

SIFET –Italian Photogrammetric and Topographic Society, ISPRS member (Società Italiana di Topografia e Fotogrammetria).
AIC – Italian Cartographic Society (Associazione Italiana di Cartografia).

Every year since 1997 ASITA organizes a National Conference during which every single Society develops its annual national congress: in such a way all the italian people of environmental survey, representation and software meet together minimizing the expenses and optimizing the results.
Furthermore in the 1987 was activated the firs official university course of Remote Sensing at the Faculty of Civil Engineering of the Politecnico di Milano.

2) Actual situation

The Remote Sensing scientific research is conducted in several laboratories (approximatively 30) mainly in the CNR and University geographically distributed in all the peninsula, working in all the classic bands, from visible to microwave on many national and international projects, covering different investigation objects, from geology to land use, from atmosferic studies to agriculture, from hydrology to oceanography, from urban planning to water pollution control, and so on. Also ASI (Italian Space Agency) promotes very actively the scientific research sponsoring several projects every year in the field of fundamental research.

The operative Remote Sensing in Italy is present at various levels and in different organizations.

Two Ministry are very active in Remote Sensing, that is Agriculture-Forestry and Foreign Affairs. The first with the national, annual inventory and yeld production of several important italian cultures, by means of Landsat images, aerial surveys and ground controls; the second through the activity of an Institute located in Florence (IAO, Istituto Agronomico per l’Oltremare) operating in Remote Sensing mainly for Developing Countries since 1974.

Many regional administrations also are active in Remote Sensing producing thematic cartography suitable for the environmental planning projects.

Regarding the satellite data collection Telespazio is working since 1972 with the Fucino Landsat receiving station. Obviously a lot of private companies use Remote Sensing techniques as a support of environmental projects, urban planning, environmental control.

Furthermore in Italy there are some foreign important organisations which operate in Remote Sensing, namely:

ESA with the ESRIN office in Frascati (Rome)
FAO with the Remote Sensing Unit in Rome
JRC with SAI (Space Applications Institute) in Ispra (Varese)
3) Education and training
The education and training in Remote Sensing are developed mainly in the University, and the “map” of the location and the title of the courses is illustrated in the Table 1:

<table>
<thead>
<tr>
<th>UNIVERSITY DEGREE</th>
<th>TITLE OF THE COURSE</th>
<th>UNIVERSITY</th>
</tr>
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<tbody>
<tr>
<td>ARCHITECTURE</td>
<td>Thematic Cartography</td>
<td>VENEZIA - IUAV</td>
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<tr>
<td>Environmental Planning</td>
<td>Remote Sensing for Environmental Planning</td>
<td>POLITECNICO - MI</td>
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<tr>
<td>Environmental Planning</td>
<td>Photogrammetric Survey for Architecture</td>
<td>GENOVA</td>
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<tr>
<td>ENGINEERING</td>
<td>Remote Sensing</td>
<td>FIRENZE</td>
</tr>
<tr>
<td>Civil</td>
<td>Hydrology</td>
<td>BRESCIA</td>
</tr>
<tr>
<td>Civil and Environmental</td>
<td>Environment Planning (with RS lab)</td>
<td>POLITECNICO – MI</td>
</tr>
<tr>
<td>Civil and Environmental</td>
<td>Remote Sensing</td>
<td>NAPOLI</td>
</tr>
<tr>
<td>Environmental</td>
<td>Remote Sensing</td>
<td>NAPOLI</td>
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<tr>
<td>Environmental</td>
<td>Remote Sensing with exercises</td>
<td>NAPOLI</td>
</tr>
<tr>
<td>Electronics</td>
<td>Remote Sensing</td>
<td>FIRENZE</td>
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<tr>
<td>Electronics (e.m. fields)</td>
<td>RS and e.m. diagnostic</td>
<td>ROMA Univ. Sapienza</td>
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<tr>
<td>Electronics</td>
<td>RS and e.m. diagnostic</td>
<td>ROMA II</td>
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<td>Electronics</td>
<td>RS and e.m. diagnostic</td>
<td>PERUGIA</td>
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<td>Telecommunication</td>
<td>RS and e.m. diagnostic</td>
<td>NAPOLI Univ. Federico II</td>
</tr>
<tr>
<td>Electronics</td>
<td>RS and e.m. diagnostic</td>
<td>NAPOLI - Ist. Navale</td>
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<td>Electronics</td>
<td>RS and e.m. diagnostic</td>
<td>CAGLIARI</td>
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<tr>
<td>Informatics</td>
<td>Remote Sensing</td>
<td>GENOVA</td>
</tr>
<tr>
<td>Aerospace</td>
<td>RS and e.m. diagnostic</td>
<td>NAPOLI Univ. Federico II</td>
</tr>
<tr>
<td>Aerospace</td>
<td>Aerospace Techniques</td>
<td>NAPOLI Univ. Federico II</td>
</tr>
<tr>
<td>Materials</td>
<td>Pollution Control</td>
<td>MODENA</td>
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</tbody>
</table>

**Graduation:**
- Environmental Engineering
- Structural Engineering
- Civil Engineering
- Environmental Engineering
- GIS
- Environmental Engineering
- Remote Sensing Systems
- Environmental Remote Sensing
- Environmental Remote Sensing
- Remote Sensing and Aerial Photography
- GIS Remote Sensing and Aerial Photography
- Remote Sensing and Natural Resources
- Aerial Photography and Remote Sensing
- Geology RS and Aerial Photography
- Remote Sensing and Cartography
- Remote Sensing and Photogeology
- Photogeology
- Photogeology
- Photogeology
- Cartography (RS)
- Photogeology
- RS of Natural Resources
- Photogeology
- Environmental Remote Sensing
- Planning Agricultural and Forestal Resources
- RS and Forestal Inventory
- RS and Forestal Inventory
- GIS
- Forestal Inventory
- Planning Agricultural and Forestal Resources

Table 1 – Remote Sensing University courses in Italy.

As it easy to see very few courses are named simply “Remote Sensing”; in several courses the Remote Sensing is only a part of the whole course.
4) Available data collection systems
- Since 1994 we have the MIVIS Daedalus hyperspectral aerial scanner (property of CNR) which operates in 102 spectral bands.
- Since 1972 the Landsat images are available from Fucino receiving station.
- A Daedalus 12 channels aerial scanner is operating at the IGM (National Geographic Institute) in Florence.
- The Italian Navy operates with 4 Daedalus UV aerial scanners for coastal pollution control.
- Various radiometers, spectrophotometers and radiometric instruments in different research institutes.

5) Publications