Capacity Building - GNSS
CRASTE-LF & IAV HASSAN 2

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OUTLINE

- CRASTE-LF Activities related to GNSS

- Master - GNSS Established in Morocco
CRASTE-LF
The CRASTE-LF has been established in Rabat on October 23, 1998. Initiative of the UN-OOSA.

Education and training on Space Science and Technology for sustainable development

Origine of candidates (1998-2016)
CRASTE-LF
CRASTE-LF
Education Programmes

- Remote Sensing and Geographic Information Systems
- Satellite Communications
- Satellite Meteorology and Global Climate
- Space and Atmospheric Sciences
- Global Navigation Satellite Systems

Education Curricula established and Published by UN-OOSA
Training Course on GNSS

“Satellite Navigation and Location Based Services”, 28 September – 24 October 2009, with participation of 35 trainees from 19 Countries & from 32 different organizations and supervised by 10 experts.

Trainees supervised by METIS project team attending the demonstration at Mohamed V Airport, Casablanca, Morocco.
Regional Training Workshop

24 trainees from 07 African countries

- Datums : Ellipsoid, Geoid.
- Coordinate Reference Systems
- Cartographic Projections
- Satellite Orbits.
- Navigation Signal.
- Errors and Precision.
- Positionning Techniques.
- Laboratories.

« Global Navigation and Based Services on Satellite Positioning »
Lomé, Republic of Togo, 3 - 7 October 2011
Post Graduate Training courses on GNSS:

- 1st SESSION: Nov. 2013 – Aug. 2015, 12 trainees from 6 member Countries & 8 different institutions.
Training on Beidou

International Institute for GNSS Education, Beijing China, July 2014.
Training Workshop on “Space Weather & GNSS Applications”, Feb 2015 with participation of 29 trainees from 13 Countries & 11 different institutes supervised by 8 experts.
Training on Glonass

Master - GNSS
CRASTE-LF & IAV Hassan 2

- From October 2016 to July 2018.
- Master recognized by the Ministry of High Education & Scientific Research.

- Beginning in IAV Hassan 2, Rabat.
- Participation of Academic Directors, Professors, Students, and Engineers from private and public sectors.

Candidates from Six Countries:
- Morocco,
- Tunisia,
- Cameroun,
- Togo,
- Niger,
- Central Africa

This Master in GNSS is recommended to candidates graduated in electronic engineering, telecommunication Engineering, civil engineering, forestry, geomatics and geographic sciences, mathematics and physical sciences.
The Master program in GNSS is divided into four parts:

- **Lessons organized in 17 modules.**
  - Lectures, tutorials, Thematic seminars, Laboratory experiments, Practical activities and projects related to the applications of GNSS.

- **A GNSS project** realized in 6 weeks.

- **One year project** conducted by each candidate in his country on an issue related to the GNSS applications. The research project will lead to the development of a thesis document that will be presented in the CRASTE-LF centre.
The Master program starts first with upgrading modules in the fundamental areas:


It addresses then topics related to areas of GNSS:


Data management and data representation:


Thematic seminars:

- Aviation, Agriculture, Navigation, Civil engineering, Natural Resources management, Geodesy and surveying, Mapping, legal aspects, space weather, Land Delimitation, GNSS Spectrum Protection and Interference Detection and Mitigation.
**Candidates (session 1 & 2)**

<table>
<thead>
<tr>
<th>Countries</th>
<th>Background</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algeria, Cameroun,</td>
<td>Agriculture</td>
</tr>
<tr>
<td>Ivory-Cost, Morocco,</td>
<td>Military</td>
</tr>
<tr>
<td>Tunisia, Senegal,</td>
<td>High Education</td>
</tr>
<tr>
<td></td>
<td>Research and Innovation</td>
</tr>
<tr>
<td></td>
<td>Transportation and Logistics</td>
</tr>
<tr>
<td></td>
<td>Energy</td>
</tr>
</tbody>
</table>
Recommendations

- Long term trainings, In-depth high-level training.
- Encourage international and regional Partnership between universities and public/private organizations and industry.
- Information dissemination about GNSS technology, training and education possibilities.