Earth Science Serving Society: 

Air Quality Training Opportunity

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GEO User Interface Committee
USA

UN Symposium on Space Tools and Solutions for Monitoring the Atmosphere in Support of Sustainable Development

14 September 2007

Institute for Space Research • Graz, Austria

Training materials based on work by Amy Huff and Jill Engle-Cox
Air Quality Training

Overview

Purpose
The training will provide an introduction to satellite remote sensing and Earth observations and their application to air quality management //in particular// and decision making.

Audience
- Air quality managers, planners, and forecasters
- People with technical knowledge of air quality planning, monitoring, and forecasting development within their organization and how that supports decision-making

Expectations
Prior to the training, each participant will need to identify and describe a specific air quality problem or decision that his/her organization faces. Participants will need to work in groups during the training, and participants will need to give brief presentations during the training
## Air Quality Training Overview

<table>
<thead>
<tr>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Satellite Remote Sensing of Earth</td>
<td>In-depth Focus On Satellite Remote Sensing for Air Quality</td>
<td>Applying Satellite Observations to Air Quality Decision Making</td>
<td>Participants Work on an Individual Project They Bring to the Training</td>
<td>Finish Individual Projects &amp; Discussion &amp; Course Wrap-up</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hands-on Exercise:</td>
<td>Hands-on Exercise:</td>
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<td></td>
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<td>Making In-depth Focus On</td>
<td>Making In-depth Focus On</td>
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<td>Air Quality Decision Making</td>
<td>Air Quality Decision Making</td>
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</tbody>
</table>
- Course Overview
- Introduction to Remote Sensing
- Remote Sensing of the Earth
- Exercise
- Principles of Satellite Measurements
- Types of Satellite Observations
- General Limitations of Satellite Measurements
Air Quality Training

Day 2

• Introduction to Using Satellite Remote Sensing for Air Quality
• List of Commonly-Measured Species and Associated Sensors
• Supplemental Ground-Based Instruments
• Examples and Explanation of Air Quality Satellite Data
• Where to Find Satellite Data and Images
• Limitations of Using Satellite Data for Air Quality Applications
• General Limitations of Satellite Measurements
Group Project - Each group will analyze the following case studies:

- Haze Event
- Wildfire
- Dust Storm

Each group will briefly present their approach, findings, and recommendation for each case study.
Individual Project - Each participant will work on the specific air quality problem that he/she brought to the training.

The participant will use information sources and knowledge gained in Days 1-3 to analyze the issue, identify satellite observations to apply to the problem, assess alternatives, and make recommendations on how to proceed.
Morning – Participants will complete their individual projects.

Each participant will give a brief presentation on their specific air quality problem, their approach, and their findings and recommendations.

Afternoon – Review and Discussion

Brief review of the course:
- Advantages of Using Satellite Remote Sensing
- Limitations of Satellite Remote Sensing
- Summary and Wrap-up

Open Forum for Questions and Discussion
Cost:
- Training Materials
- Expenses (travel and others) for participants
- Training Facility
- Trainers

Location:
Asian Institute of Technology
Pathumthani, Thailand

Date: 2007-2008
AIT: MISSION

To develop highly qualified and committed professionals who will play a leading role in the sustainable development of the region and its integration into the global economy.
MULTICULTURAL ENVIRONMENT

- 2000 Students from 40+ Countries/Territories
- 15000+ Alumni from 80 Countries/Territories
- 23000 Short-term Trainees from 70+ Countries/Territories
- 130 World Class Faculty from 20+ Countries
- 800 Research and Support Staff from about 30 Countries
- About 200 Sponsored Research Projects
- 29 Board of Trustee members from 21 Countries
School of Engineering and Technology (SET)

School of Environment, Resources and Development (SERD)

School of Management (SOM)

AIT EXTENSION

AIT CENTERS
Vietnam
Indonesia

ACADEMIC OFFERING & PROFESSIONAL TRAINING
### DISTRIBUTION OF GRADUATES by Gender

(1961 - 2007)

<table>
<thead>
<tr>
<th>Period</th>
<th>Female</th>
<th>Male</th>
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</thead>
<tbody>
<tr>
<td>1961 - 1970</td>
<td>11</td>
<td>346</td>
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<tr>
<td>1971 - 1980</td>
<td>118</td>
<td>1577</td>
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<tr>
<td>1981 - 1990</td>
<td>488</td>
<td>2673</td>
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<tr>
<td>1991 - 2000</td>
<td>1414</td>
<td>3993</td>
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<tr>
<td>2001 - 2007</td>
<td>1708</td>
<td>2992</td>
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</tbody>
</table>

Total:
- Female: 3739
- Male: 11581

**Total Graduates:** 15319
15000+ ALUMNI from 80 Countries/Territories

Thailand 26.06%
Vietnam 12.44%
Bangladesh 5.91%
Philippines 5.85%
India 5.76%
Taiwan 5.71%
Nepal 5.62%
Sri Lanka 5.17%
Pakistan 4.57%
Indonesia 3.95%
China 4.36%
Myanmar 2.95%
Malaysia 2.03%
Cambodia 1.95%
Laos 1.50%
South Korea 1.03%
Hong Kong 0.59%
Japan 0.56%
Mongolia 0.27%
Singapore 0.19%
Iran 0.14%
Central Asia 0.35%
North & South America 0.21%
Others 0.31%
Africa 0.28%
Thailand 26.06%
Vietnam 12.44%
Bangladesh 5.91%
Philippines 5.85%
India 5.76%
Taiwan 5.71%
Nepal 5.62%
Sri Lanka 5.17%
Pakistan 4.57%
Indonesia 3.95%
China 4.36%
Myanmar 2.95%
Malaysia 2.03%
Cambodia 1.95%
Laos 1.50%
South Korea 1.03%
Hong Kong 0.59%
Japan 0.56%
Mongolia 0.27%
Singapore 0.19%
Iran 0.14%
Central Asia 0.35%
North & South America 0.21%
Others 0.31%
Africa 0.28%
AIT EXTENSION ALUMNI (1977 – 2006)

23000 Short-term trainees from 70+ Countries/Territories

Thailand 39.14%
Bangladesh 10.74%
Sri Lanka 7.33%

Others 9.78%

Pakistan 1.84%
Vietnam 3.04%
Nepal 3.64%
Bhutan 3.71%
Philippines 3.91%

Cambodia 2.66%
Laos 2.03%
Malaysia 4.47%
Indonesia 4.74%

India 2.96%
NATIONALITY DISTRIBUTION OF FACULTY
(Total: 130)

- Thailand: 24.85%
- India: 14.62%
- Japan: 8.46%
- United States: 6.93%
- Sri Lanka: 6.15%
- Finland: 5.35%
- Vietnam: 4.61%
- Switzerland: 3.07%
- Germany: 3.07%
- Canada: 3.84%
- Bangladesh: 3.07%
- Norway: 0.78%
- South Africa/Russia: 0.78%
- Netherlands: 0.78%
- Belgium: 0.78%
- France: 0.78%
- Nigeria: 0.78%
- Sweden: 2.30%
- Philippines: 3.07%
- Nepal: 3.07%
- China: 1.53%
- New Zealand: 1.53%
- South Korea: 1.53%
- Belgium: 0.78%
- France: 0.78%
- Netherlands: 0.78%
- Norway: 0.78%
- South Africa/Russia: 0.78%
- Switzerland: 0.78%
- Thailand: 24.85%
- India: 14.62%
- Japan: 8.46%
- United States: 6.93%
- Sri Lanka: 6.15%
# CURRENT STUDENTS

(1909 Students from 45 Countries/Territories)

## Countries

<table>
<thead>
<tr>
<th>Countries</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Thailand</td>
<td>867</td>
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<td>2. Vietnam</td>
<td>318</td>
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<tr>
<td>3. Nepal</td>
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<tr>
<td>4. India</td>
<td>74</td>
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<td>5. Pakistan</td>
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<td>6. Sri Lanka</td>
<td>64</td>
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<tr>
<td>7. Myanmar</td>
<td>63</td>
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<tr>
<td>8. Bangladesh</td>
<td>61</td>
</tr>
<tr>
<td>9. Indonesia</td>
<td>49</td>
</tr>
<tr>
<td>10. Lao PDR</td>
<td>40</td>
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<tr>
<td>11. Cambodia</td>
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<td>12. PR China</td>
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<td>13. Philippines</td>
<td>18</td>
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<tr>
<td>14. Bhutan</td>
<td>17</td>
</tr>
<tr>
<td>15. Mongolia</td>
<td>14</td>
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<tr>
<td>16. France</td>
<td>13*</td>
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<tr>
<td>17. Afghanistan</td>
<td>08</td>
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<tr>
<td>18. Taiwan</td>
<td>08</td>
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<tr>
<td>19. South Korea</td>
<td>06</td>
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<td>20. Japan</td>
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<td>21. United States</td>
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<td>22. Maldives</td>
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<tr>
<td>23. Malaysia</td>
<td>03</td>
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<tr>
<td>24. Turkmenistan</td>
<td>03</td>
</tr>
<tr>
<td>25. Uzbekistan</td>
<td>03</td>
</tr>
<tr>
<td>26. Canada</td>
<td>02</td>
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<tr>
<td>27. East Timor</td>
<td>02</td>
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<td>28. Iran</td>
<td>02</td>
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<tr>
<td>29. Italy</td>
<td>02</td>
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<tr>
<td>30. Nigeria</td>
<td>02</td>
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<tr>
<td>31. Germany</td>
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<tr>
<td>32. Kyrgyzstan</td>
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<tr>
<td>33. Cameroon</td>
<td>01</td>
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<tr>
<td>34. Guinea</td>
<td>01</td>
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<tr>
<td>35. Israel</td>
<td>01</td>
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<tr>
<td>36. Malawi</td>
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<td>37. Morocco</td>
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<td>38. Russia</td>
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<td>39. Switzerland</td>
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<td>40. Togo</td>
<td>01</td>
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<td>41. Turkey</td>
<td>01</td>
</tr>
<tr>
<td>42. United Kingdom</td>
<td>01</td>
</tr>
</tbody>
</table>

## Exchange Students

- France: 06
- Germany: 06
- Finland: 03
- PR China: 02
- Sweden: 02
- Bangladesh: 01
- Netherlands: 01
- Indonesia: 01
- Russia: 01

*Exchange and Dual Degree