



国际气候与环境科学中心
International Center for Climate and Environment Sciences



Reports of
COMSATS International Thematic Research Group on
“Climate Change and Environmental Protection”

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I. Broad Objectives of COMSATS ITRG



- **To achieve South-South cooperation by creating linkages among the organizations working in the “climate and environmental sciences” in the developing countries:**
 - **Joint Research Projects**
 - **Experts Exchange**
 - **Knowledge Sharing**
 - **Capacity Building**
 - Short-term (Training Course, Visiting Scientist Program)
 - Long-term (Post graduate Studies; PhD and Master Programs)
 - **Sharing of Facilities and Resources**



II. Activities of COMSATS ITRG



- 1. 5th ITRG Meeting held in Beijing**
- 2. New International Collaboration Established**
- 3. International visitings**
- 4. Capacity Building Activities**
 - International Training Symposium and Workshop
 - Graduate students and Postdoc program
 - Short-term visiting
- 5. Research Progress from ITRG members**



1、 5th Meeting of COMSATS' ITRG held in Beijing



- **The 5th Meeting of COMSATS' ITRG on “Climate Change and Environmental Protection” was held on September 28, 2016 in Beijing. This meeting was jointly organized by ICCES and COMSATS.**



Objective: To exchange research progress from ITRG members, and develop new research topics of common interest for further collaboration.

Theme: Atmospheric aerosol/Air pollution, the most serious and concerned environmental problem in developing countries

5th Meeting of COMSATS' ITRG on CCEP



- **21 scientists represented 18 organizations from Pakistan, Brazil, Thailand, Nigeria, Iran, Jamaica, Ghana, Egypt, Sri Lanka and China attended this meeting. Among them, some are existing group members belonging to China, Pakistan, Iran and Thailand.**
- **The group reviewed its progress and identified the following six topics for its future activities. The group also designated respective coordinators for the afore-mentioned topics/sub-groups.**



New Research Topics and Coordinators

S/N	Topic	No. of Members	No. of Regions	Coordinator
1	Land use, aerosol and climate change	21	7 (Pakistan, Iran, Egypt, Thailand, Jamaica, China, Nigeria)	Prof. Zhaohui Lin (China)
2	Monitoring and comparison of aerosol	14	5 (Pakistan, Nigeria, Iran, Ghana, Thailand)	Dr. Surat Bualert (Thailand)
3	Monitoring and comparison of extreme events	10	6 (Sri Lanka, Nigeria, Pakistan, Jamaica, Thailand, China)	Prof. Zhaohui Lin (China)
4	Urbanization and environmental impact	14	6 (Egypt, China, Pakistan, Nigeria, Sri Lanka, Thailand)	Dr. Sathaporn Monprapussorn (Thailand)
5	Simulations and prediction of aerosol and their validation	19	8 (Sri Lanka, Pakistan, Brazil, Thailand, China, Nigeria, Iran, Ghana)	Dr. Imran Shahzad (Pakistan)
6	Climate change adaptation and sustainability	12	4 (Pakistan, Nigeria, Egypt, Thailand)	Dr. Zakaria Abdalla (Egypt)

Group Members' Action Plan of the 5th Progress Meetings

Timeline	Activities and Responsibilities
Sep-Oct 2016	Sharing of information/experiences related to the topics, including: a) Data (type, period, frequency, site information, location map, version, data policy, etc.) b) Related research information c) Models d) Observation equipment
Oct-Dec 2016	Drafting of proposals/pre-meeting assessments by: a)Email communication; b)Web meetings
	Organizing Trainings/ workshops and Identification of Host Institution
	Expert exchange (Capacity building) including: a)Short-term visit; b)Students exchange
	<ul style="list-style-type: none">• Joint Publications• Funding Sources

2、 New International Collaborations



- ICCES scientists visited Srinakharinwirot University(SWU), Hydro and Agro Informatics Institute (HAI), Kasetsart University, and Asian Institute of Technology (AIT) in Bangkok, Thailand in 2016.
- A MoU was signed between ICCES and SWU.



- **During September 11-29, 2016, Dr. Somporn Chantara and Dr. Wan Wiriya from Chiang Mai University visited ICCES, and a MoU between Chiang Mai University and ICCES was signed to promote the collaboration opportunities between the two parties.**



New ITRG Group Members

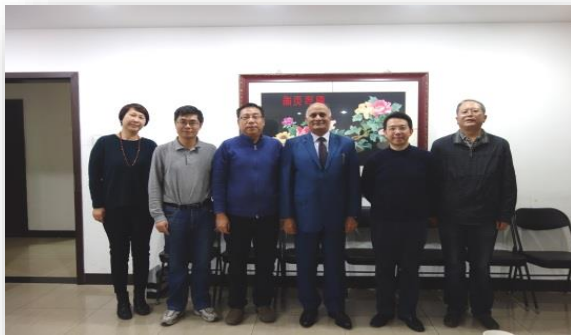


- ① Srinakharinwirot University(SWU), Thailand (Dr. Sathaporn Monprapussorn)
- ② Kasetsart University, Thailand (Dr. Surat Bualert)
- ③ Chiang Mai University (Somporn Chantara)
- ④ Ghana Atomic Energy Commission (Hannah Affum , Research Officer)
- ⑤ Department of Physics, The Open University of Sri Lanka (Ms.H. K.Wasana Isuri Jayawardena)
- ⑥ Central Environment Authority (R W S M N Manorathne)
- ⑦ Pakistan Meteorological Department (Ghazala Qaiser, National Drought Monitoring Center, PMD)
- ⑧ Faculty of Geography and Environmental Sciences, al –Faraby Kazakh National University, Kazakhstan (Prof. Vitaly Salnikov, Dean of the faculty)
- ⑨ Tanzania Industrial Research and Development Organization (TIRDO)
(Lugano Wilson, Director of Engineering Development and Head of Energy Technologies Division)

3、 International Visiting - Pakistan



- Dr. Tahir Naeem and Dr. Bahadar Nawab Khattak from COMSATS Institute of Information Technology (CIIT), visited ICCES in May 2016.



- Dr. Ghulam Rasul, director general of Pakistan Meteorological Department (PMD), visited IAP and ICCES on November 16, 2016.

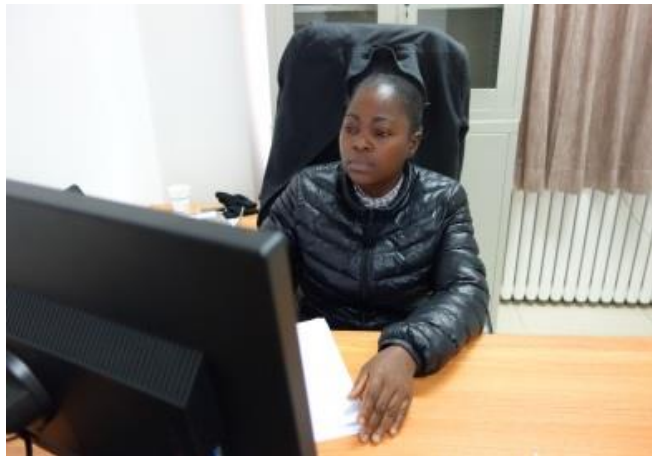
- CIIT delegation leaded by Prof. Javaid Anwar and Dr. Muhammad Shahzad visited ICCES in April, 2017.



Visiting-Nigeria



- **Prof. Okechukwu Kelechi Nwofor from Imo State University, Nigeria made a three-month visit (from August 1st to October 29th, 2016) at ICCES under the CAS-TWAS PIFI Initiative.**



- **During September 6-November 26, 2016, Dr. Mojisola Adeniyi from University of Ibadan, Nigeria visited ICCES under the TWAS-UNESCO Associateship.**



Visiting-Brazil



- Prof. Paulo Nobre and Dr. Debora Alvim from National Institute for Space Research, Brazil visited ICCES and attended the Seminar on China-Brazil Earth System Model Cooperation in September 2016.



- Dr. Filipe Costa and Dr. Rafael Santana from Universidade Federal da Bahia (UFBA), Brazil visited ICCES for 2 weeks in 2016. They introduced the latest research results in data assimilation, and participated in the seminar on Earth System Model.



Visiting-Sri Lanka



- **Honorable State Minister Lakshman Senewiratne, Ministry of Science, Technology and Research, Sri Lanka, also a member of the Sri Lankan parliament, visited ICCES and IAP on April 20, 2017.**



4、Capacity Buildings -- Training Workshop



International Lecture Course on “Atmospheric Aerosol”

- The Lecture Course on “Atmospheric Aerosol” was held during September 25-27, after the 15th CTWF symposium.
- **90** participants, including **34** oversea participants from 10 developing countries

□ Topics:

- ✓ aerosol physical and chemical properties and effects on cloud formation
- ✓ aerosol modeling and comparison with observations
- ✓ parameterizations of aerosol and aerosol-cloud interactions in climate models
- ✓ impacts of aerosols on climate



□ Invited Lecturers:

- Prof. Brian Toon from University of Colorado
- Prof. Margaret Tolbert from University of Colorado
- Dr. Mian Chin from NASA Goddard Space Flight Center
- Prof. Hong Liao from Nanjing University of Information Science & Technology
- Prof. Xiaohong Liu from the University of Wyoming

CAS-TWAS-WMO Forum (CTWF)



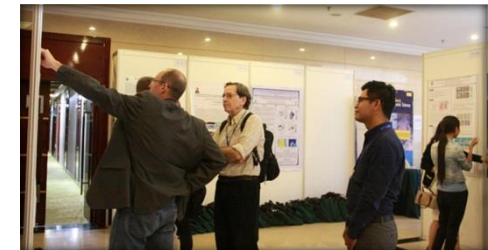
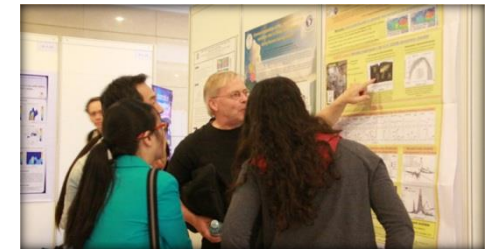
➤ 15th CTWF International Symposium on Atmospheric Aerosol

September 19-24, 2016 Beijing, China

❑ Joint Organizer:

- AeroCom(Aerosol Comparisons between Observations and Models)
- AeroSAT(International Satellite Aerosol Science Network)

- More than **140** scientists coming from all over the world attended this conference, including **80** foreign delegates coming from Belgium, Brazil, Egypt, Finland, France, Germany, Ghana, Iran, Jamaica, Japan, Netherlands, Nigeria, Norway, Pakistan, Spain, Sri Lanka, Sweden, Switzerland, Thailand, United Kingdom, United



Short-term visiting



- **Prof. Okechukwu Kelechi Nwofor from Imo State University, Nigeria made a three-month visit (from August 1st to October 29th, 2016) at ICCES under the CAS-TWAS PIFI Initiative.**

- **During September 6-November 26, 2016, Dr. Mojisola Adeniyi from University of Ibadan, Nigeria visited ICCES under the TWAS-UNESCO Associateship.**



In 2016, **15** visiting scholars from institutes and universities of different countries, including leading scientists, senior researchers, PhD students and postdoc fellows from **Nigeria, Thailand, Pakistan, Brazil and Sri Lanka** were invited to visit ICCES.

Visiting Scientist from Sri Lanka

Invited by CAS-TWAS Centre of Excellence for Climate and Environment Sciences (ICCES), two Sri Lankan scientists attended the 15th CTWF International Symposium (September 19-24, 2016), CAS-TWAS International Lecture Courses on Atmospheric Aerosol (September 25-27, 2016) and the 5th COMSATS' ITRG on Climate Change and Environmental Protection (September 28, 2016).



Dr. R W S M N Manorathne, Central Environmental Authority, Ministry of Mahaweli Development and Environment, Sri Lanka



Dr. H. K. Wasana Isuri
Jayawardena, University of Colombo/ The Open University of Sri Lanka

◆ International Students

- Kritanai Torsri (Thailand), Victor Nnamdi Dike (Nigeria) and Sherly Selton (Sri Lanka) continue their PhD program in ICCES.
- Farhan Saleem (Pakistan) started his first year of study in ICCES in 2016.

◆ Postdoc Researchers

- Dr. Worachat Wannawong from Hydro and Agro Information Institute (HAI), Thailand, continues his work in ICCES.
- Dr. Bushra Khalid from COMSATS Institute of Information Technology (CIIT), Pakistan finished her research work at ICCES in February 2017 and continues her research work in Austria.



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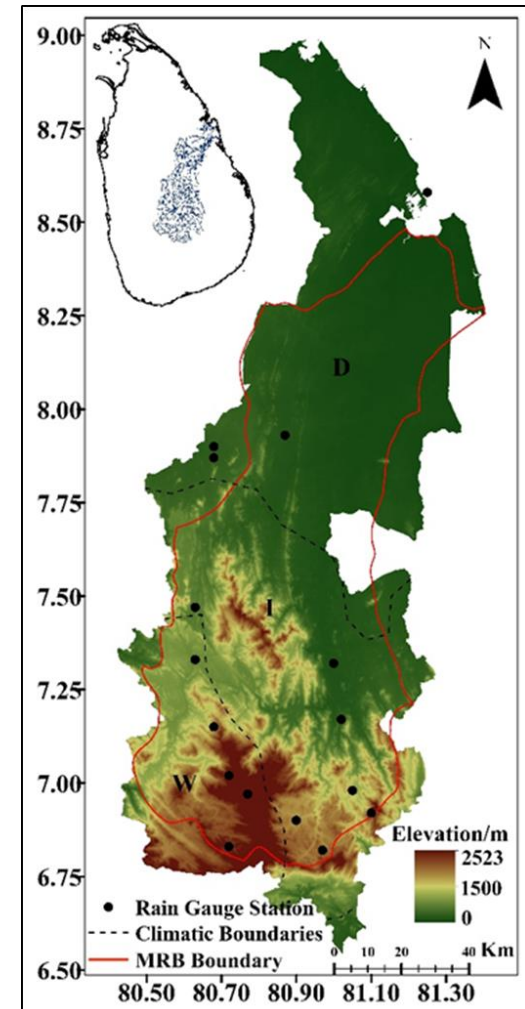
ICCES-Sri Lanka Collaboration

China-Sri Lanka Collaborative Research on modelling and prediction of hydro-meteorological extreme events

ICCES worked with ITI in Sri Lanka to investigate the hydro-meteorological extremes in Mahaweli watershed.

The goal was to analyze the general features of extreme events in Mahaweli watershed, and to establish a large-scale land surface hydrological coupling model for the modeling and prediction of hydrological extremes in Mahaweli watershed.

Mr. Sherly from ITI has been working on this issue with supervise by Prof. Zhaohui LIN under the CAS President's International Fellowship Initiative(PIFI).



IMO STATE UNIVERSITY

- Investigates the relationship between MODIS fine and coarse mode aerosol optical depth and atmospheric visibility at Ilorin in the sub-Sahel of Nigeria.
- Presents correlation of visibility with fine and coarse aerosol optical depths and at Ikeja, Nigeria.

Department of Physics, University of Ibadan

- Variations of heat and cold waves based on four identified homogeneous temperature regions over West Africa

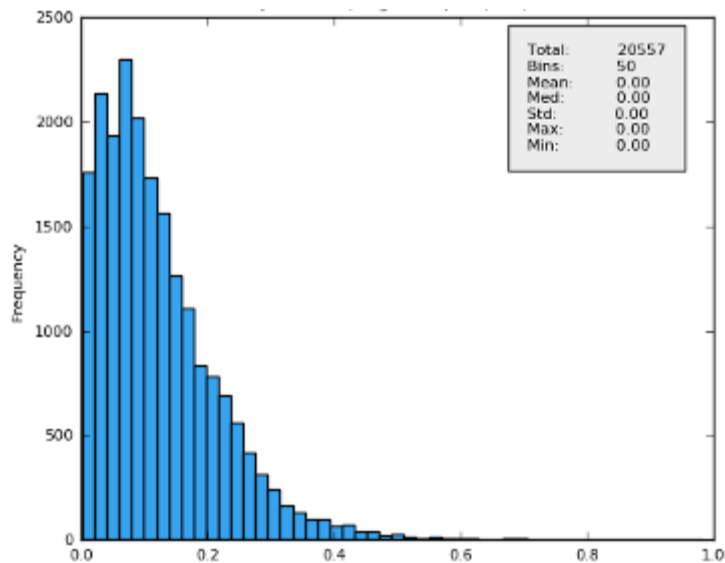


Selected Research Achievements - Pakistan

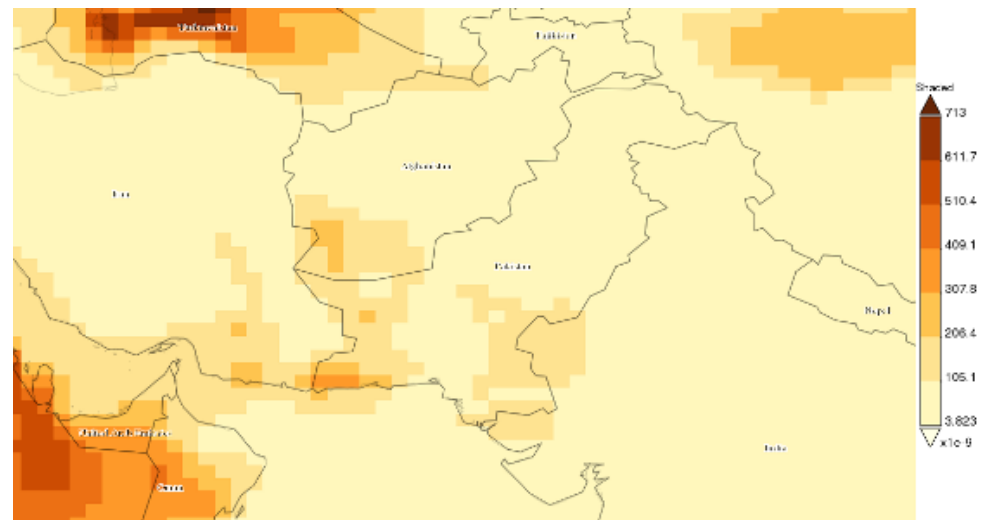


COMSATS Institute Information Technology Islamabad

- Research project “Simulation and Validation of Dust for years 2011-2015 over region bounded by (50W, 20S, 85E, 40N)



Histogram Monthly Average Dust Surface Mass Concentration $\times 10^{-6} \text{ (kg/m}^3)$ @ 0.5×0.625 degree from MERRA-2 for years 2011-2015 over region bounded by 50W, 20S, 85E, 40N



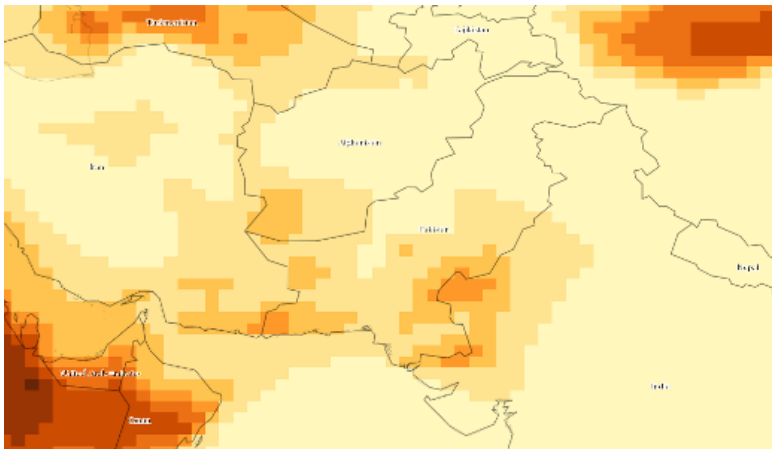
Winter (DJF) mean Dust Surface Mass Concentration (kg/m^3) @ 0.5×0.625 degree from MERRA-2 for years 2011-2015 over region bounded by 50W, 20S, 85E, 40N

Selected Research Achievements - Pakistan

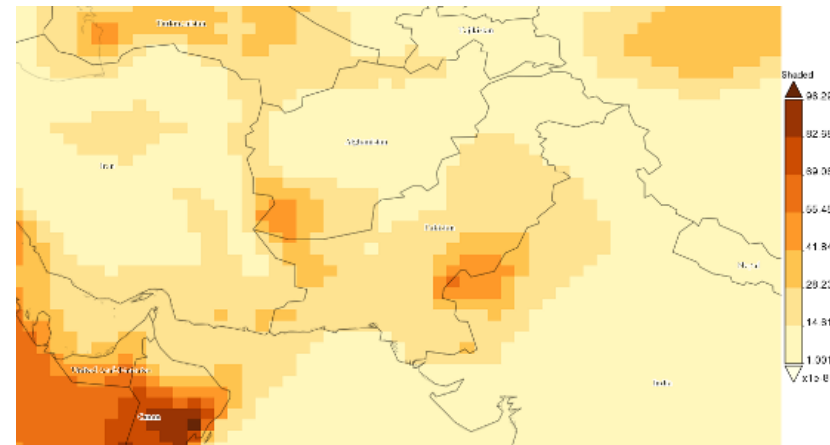


COMSATS Institute Information Technology Islamabad

- research project “Simulation and Validation of Dust for years 2011-2015 over region bounded by 50W, 20S, 85E, 40N”



Spring (MAM) mean Dust Surface Mass Concentration (kg/m^3) @ 0.5×0.625 degree from MERRA-2 for years 2011-2015 over region bounded by 50W, 20S, 85E, 40N



Summer (JJA) mean Dust Surface Mass Concentration (kg/m^3) @ 0.5×0.625 degree from MERRA-2 for years 2011-2015 over region bounded by 50W, 20S, 85E, 40N

Selected Research Achievements - Thailand



Srinakharinwirot University

➤ Three ongoing projects in Department of Geography, Faculty of Social Sciences, Srinakharinwirot University:

- Land Use Scenarios of Huayluang River Basin and Udonthani Province, funded by Thailand research funds (expected to be completed by June 2017);
- Integrated analysis of climate, land-use and water for resilient urban megacities: A case study of Thailand, Lao PDR and Vietnam, funded by Asia-Pacific Network on Global Change Research (APN) (expected to be completed by April 2017);
- Assessment of Food Security Impact and adaptation under Climate Change : A Case Study of Rice Farmland in Phra Nakhon Si Ayutthaya Province, Thailand, funded by Office of the Higher Education Commission (OHEC) (expected to be completed by May 2017).



III. Future Plan



Strengthen the collaborations within ITRG member centers

1. To develop joint proposals
2. To organize international training workshops both in China and abroad
3. To host more short-term visiting scholars
4. To joint supervise PhD and Master students
5. More support from COMSATS is needed



Develop bilateral joint Labs/Centers between COMSATS member countries with focus on climate change, impact and mitigation

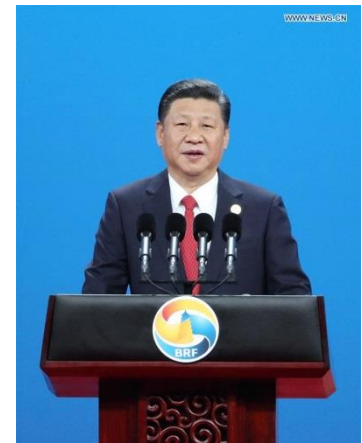


**Joint Research Center on Climate change and impact
Study for Sustainable development in the South**

Work Together to Build the Silk Road Economic Belt and The 21st Century Maritime Silk Road

Speech by H.E. Xi Jinping

President of the People's Republic of China
At the Opening Ceremony of The Belt and Road Forum for International Cooperation
14 May 2017



China Launch the Belt and Road Science, Technology and Innovation Cooperation Action Plan, which consists of:

1. Science and Technology People-to-People Exchange Initiative: **2500** short-term research visits; Training **5,000** foreign professionals
2. Joint Laboratory Initiative: **50 joint laboratories**
3. Science Park Cooperation Initiative
4. the Technology Transfer Initiative
5. RMB **60 billion to developing countries and international organizations**
6. additional contribution of **US\$1 billion to the Assistance Fund for South-South Cooperation**

- Set up a big data service platform on ecological and environmental protection.
- Establishment of an international coalition for green development on the Belt and Road,
- Provide support to related countries in adapting to climate change.



Thank You !