ARCA Newsletter

Alexandria Research Center for Adaptation to Climate Change

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Editorial: What is Different about ARCA?

Alexandria Research Center for Adaptation to Climate Change (ARCA) was established, in 2011, through a research project supported by the IDRC – Canada, to become an outstanding multidisciplinary center of excellence for integrated climate change adaptation to support cross-cutting policy making. For this purpose, ARCA is focusing on a multitude of themes, in the climate change impacts, vulnerability and adaptation arena, including conducting and supporting research work, capacity building activities and networking and communication.

ARCA began implementing its planned activities in October 2011 focusing on a multitude of themes, in the climate change impacts, vulnerability and adaptation arena, including conducting and supporting research work, capacity building activities and networking and communication.

ARCA, during the past two years, provided high value-added activities. For example, ARCA provided training to about 530 of individuals affiliated to different stakeholder groups. ARCA has also awarded four small research grants in a variety of disciplines associated with climate change ranging between marine biodiversity, wetland ecosystems, and animal production. Additionally, there is the research work conducted by ARCA core-team, which led so far to the publication of three research papers in peer-reviewed journals.

Furthermore, ARCA produced a number of technical reports to be published in ARCA Working Papers series, first issue in January 2014.

ARCA supporting national policy and planning for climate change, developed institutional linkages with main stakeholders in the climate change arena with three signed MOUs, the most important of which with the Egyptian Environmental Affairs Agency (EEAA), the main coordinating body of climate change work in Egypt. The signed MOU with the EEAA stipulates cooperation not only in capacity building activities to EEAA and its regional branches, but also providing technical support to its activities including for instance, reviewing existing national adaptation strategy.

It is worth mentioning that ARCA adopts a multidisciplinary, participatory and flexible approach in its all activities and attempts to create a dialogue between different stakeholders at different levels on climate changes efforts of concern.

ARCA Core Team Member Activities

Prof. Mohamed A. Abdrabo, ARCA Executive Director participated in two workshop in Latin America; the first was organized by IDRC—Canada in Belem, Brazil on 2-4/10/2013. The workshop was entitled " Synthesis of Research on Adaptation to Climate Change in Estuarine and Coastal Systems workshop, Belem, Brazil" .

The second workshop was held in Montevideo, Uruguay on 6-8/10/2013, under the title "Regional Centre for Climate Change and Decision Making".

Prof. Abdrabo did two presentations in the workshops about ARCA objectives and activities.

Prof. Abdrabo also participated as advisor on the UN-ESCWA VICCAR team meetings that were held on 25-26/11/2013 in Amman. The group intends to assess vulnerability of Arab countries to climate change impacts.

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Capacity building activities

Workshop "*How to Develop a Project Proposal*" (BS-01) 6th Round 17-19/12/2013

"During the past fourth six months, ARCA provided ARCA provided capacity building activities to 105 researchers and officials"

During the past six months, ARCA organized eight training workshops. Six of these workshops were targeting researchers covered the following topics:

- Sustainable animal production under climate change conditions held on 18-19/12/2013.
- How to Develop a Project proposal (two rounds held on 02-04/07/2013 and 17-19/12/2013, respectively).
- GIS for Socioeconomic applications held on 12-13/11/2013.
- GIS Applications in Assessing Vulnerability to SLR (two rounds held on 19-21/11/2013 and 10-12/12/2013)

These six workshops had 85 participants from various Egyptian academic and research institutions.

Meanwhile, during the same period two stakeholders workshops (with 20 participants) were held covering the following two topics:

- How to Develop a Project proposal held on 03-05/09/2013
- GIS Applications in Assessing Vulnerability to SLR held on 26-28/11/2013

The total number of applicants to the organized eight workshops was 255 of various stakeholders groups, 41% of which were selected to participate in the organized workshops. This means that during the past six months, ARCA provided capacity building activities to 105 researchers and officials.

Concerning the institutional affiliation and geographical coverage of the participants, they were affiliated to five different universities. There were also participants from research institutes affiliated with the Ministry of Agriculture and Ministry of Scientific Research. Additionally, about 20% of the participants were working for the Egyptian Environmental Affairs Agency (EEAA).

.To perceive the impacts of ARCA capacity building activities, a survey was conducted. The survey covered about 13%of the total number of participants in capacity building activities organized by ARCA during the last two years. The results of the survey revealed that 72.9% of the sample thought that ARCA activities succeeded in creating opportunities for networking the researchers working in the field of climate change. Meanwhile, 97.2% thought that these activities played a crucial role in raising awareness among different groups of stakeholders about climate change. Moreover, 83.3% stated that ARCA training workshops supported their research capacities in the field of climate change. Also, 95.8% stated that ARCA training workshops succeeded in supporting them in their fields of work. 29.2% of the sample involved in the survey stated that they started to carry out research work in the field of climate change after participating in ARCA Training workshops.

Visiting Researcher

Dr. Sanchize in his visit to Faculty of Agriculture– Kafr El Sheik University assessing progress of one of ARCA small research grants

ARCA invited Dr. Juan Pablo Sanchiz, researcher, Animal Breeding and Genetics Department, IRTA – Lleida, Spain to visit Alexandria over the period 14th - 21st December 2013.

During his short visit Dr. Sanchize provided technical support to and progress assessment of one of ARCA small research grants entitled "Assessing impacts, vulnerability and potential adaptation options of climate change on livestock in Egypt".

The progress assessment report was intended to highlight any potential shortcomings or opportunities to the project team as well as to ARCA. This would in turn ensure efficiency and high quality associated with ARCA activities.

Moreover, Dr. Sanchiz participated as instructor in one of ARCA workshops entitled "Sustainable animal production under climate change conditions" held on 18-19/12/2013.

Dr. Sanchiz expressed his institute interest in joining forces with ARCA and the project team from Kafr El Sheikh in developing research project proposals for funding in issues relating to climate change and animal stocks in Egypt and Spain.

Small Research Grants

Up to present ARCA organized four rounds of calls for small research grants. The four rounds included 12 different research themes covering different aspects of vulnerability and adaptation of the Nile Delta to climate change impacts. Under these four rounds, ARCA received a total of 36 concept notes. According to the two-stage process, six concept notes were short listed and applicants were asked to develop full project proposals, which were further subjected to final selection decision. Among these six submitted full proposals; four were accepted and funded by ARCA with total funds of L.E. 396,000.

The regular follow-up on the four funded research projects revealed that: the four funded research project are making different levels of progress.

During the past six months, ARCA announced a 4th round call for proposals. Under the fourth round of call for proposal, ARCA received 11 concept notes. Unfortunately, no concept notes were selected for funding in this round due to wide range of reasons including for example, shortcomings in concepts and methodologies of the submitted concept notes, and proposed project durations, exceeding the 12 months (the remaining duration of ARCA research project).

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"Under the fourth round of call for proposal, ARCA received 11 concept notes"

Research activities

During the past six months ARCA engaged Prof Ibrahim ElShanawi, Coastal Research Institute (CoRI) to undertake a study to model and predict the changes in groundwater table levels in the northern area of the Nile delta under three sea level rise scenarios namely; 0.59, 1.40 and 2.0 meter, respectively.

The study employed three analytical and one numerical model to evaluate the sharp interface between the freshwater and saltwater. The evaluation includes the position of the interface and its movement under present conditions and for predicting effects of possible sea level rise.

The results indicate that different sea level rise scenarios, ranging between 0.5 and 2.0 meters is expected to impact the movement of the sharp interface, water salinity and shallow water table.

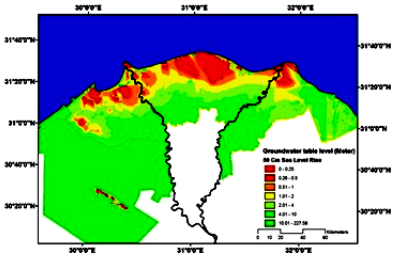
As the process of sea water intrusion is a dynamic process, the expected variation of heads after 30 years due to sea level rise will lead to a change in head ranging between 1.0 meter above land levels and 0.5 meters below land levels. Also, the study predicted the levels of groundwater table up to the year 2100 due to SLR. These levels were represented in a number of isoline maps, each associated with a certain SLR Scenario.

The predicted levels of groundwater table were estimated in relation to the sea level disregarding land topography and land elevation. In this respect, the study concluded that further work is needed to describe the situation more accurately through using an accurate Digital Elevation Model (DEM) for Nile Delta coastal zones.

Accordingly, to adjust groundwater table levels provided by the study and be relative to ground surface, a GIS-based approach was implemented by ARCA core-team. Using ArcGIS 10.0, accurate levels of predicted groundwater table were estimated through two main steps:

- Firstly, a synoptic coverage of the predicted levels of groundwater table was created. This step involves creating DEM from isoline maps using (Topo To Raster Tool).
- Secondly, the created DEM of groundwater table levels was adjusted based on land elevation through up each DEM of the groundwater table levels to the DEM of land elevation using (Spatial Analyst Tool).

As a result of this methodology, adjusted levels of predicted groundwater table were estimated taking into account land elevation. The adjusted levels were produced by DEMs each of them provides a synoptic coverage representing subtle spatial variations in groundwater table levels under certain scenario of expected SLR. These produced adjusted groundwater tables levels under different scenarios of SLR will be utilized to support future research work to be conducted by ARCA.



Different levels of groundwater table due to 0.5 meter sea level rise Up to the year 2100

Article: Climate Change and the Nile Delta: Stakeholder Analysis

Stakeholder analysis is not concerned only with identifying and assessing the attitude of different individuals, bodies or groups about any proposed action. Rather, the process of identifying stakeholders as well as well their powers and attitudes should be complemented by considering the context, socioeconomic, institutional and legal and policy framework, within which these stakeholders act

Climate change is expected to have a wide range of impacts on almost all sectors and/or communities, which would affect a wide range of groups, bodies and/or individuals, typically called stakeholders. Accordingly, involvement of such groups, bodies and/or individuals is considered essential when studying and assessing climate change impacts, vulnerabilities as well as potential adaptation options. Such involvement would support more informed decisions and/or policy in relation to climate change impacts, vulnerability and adaptation. It would also allow for better chances for increasing resilience to climate change and clear ownership of the outcome of such work by different stakeholder groups.

Stakeholder analysis is not concerned, in this context, only with identifying and assessing the attitude of different individuals, bodies or groups about any proposed action. Rather, the process of identifying stakeholders as well as well their powers and attitudes should be complemented by considering the context, socioeconomic, institutional and legal and policy framework, within which these stakeholders act.

Generally, it can be noted that the case of the Nile Delta has large number of stakeholders with varying, sometimes conflicting, interests. These stakeholder groups also have different levels of financial, human, technical and political power. To involve all stakeholder groups to be in ARCA activities, there is a need to understand their strengths and/or weaknesses. Also, these different groups with various interests need different messages and tools for them to be involved. The main issues of concern that could be raised based upon the conducted stakeholder analysis may suggest that there is:

- Existence of large number of stakeholders with different interests, which are in sometimes conflicting.
- Lack of cooperation and coordination on climate change among different stakeholders, even within the same sector.
- Centralization in governmental bodies sometimes limits the changes of local units to deal with climate change impacts and vulnerabilities.
- Lack of integrated coastal area management that would coordinate efforts in coastal development may adversely affect any potential actions for adaptation to climate change in such areas.
- A tendency for more powerful entities to enforce their views and development ideas, especially with the absence of any concrete policy and/or strategies for coastal area management.
- Limited knowledge and capacity among various stakeholders on climate change impacts, vulnerability and adaptation.
- Lack of updated and accurate data needed for assessing the climate change and associated SLR impacts on the Nile Delta
- Lack and sometimes absence of climate change impacts, vulnerability and adaptation work, which make the Nile Delta very vulnerable to potential changes in climate change and associated sea level rise.
- A need to review and modify existing adaptation strategy for Egypt, as it is very general and need to be tailored to the specific conditions of Egypt in general and its coastal areas in particular.

Also, it should be noted that existing laws associated with controlling and managing coastal areas, which by nature require considerable coordination among different government and non-government bodies, do not provide a sound base for this to happen. This in turn may adversely affect any efforts to adapt to climate change in coastal areas, especially in the case of sea level rise.

It can be argued that top priorities to alter the situation and enable an environment for action on climate change adaptation involve:

- Awareness raising with different stakeholders, which would not only involve convey knowledge but attempt to cause change in attitude. This would require capacity building activities and also continuous updating and involvement in its activities.
- Conveying and sharing of introductory and advanced knowledge with researchers in different disciplines on climate change impacts, vulnerability and adaptation.

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