5th SWAN Progress Meeting Program 2014

Towards a Framework for a Transatlantic Dialogue on Water: What Role for *The University of Arizona*?

November 10-13, 2014

The University of Arizona, Tucson, AZ85719

Monday, November 10

Location: Sabino Room – Student Union

8:00 am – Arrival/Coffee

8:30 am – Opening/Welcome by Joaquin Ruiz (Dean, College of Science), Franck Poupeau (Director of UMI/iGLOBES and SWAN project coordinator) and Hoshin Gupta (Department of Hydrology and Water Resources)

9:00 am - 2:30 pm – The Transatlantic Dialogue on Water (TDW) at The University of Arizona (UA).

During this session the four talks presented will focus on several topics related to the collaboration between Universities and water Companies/Institutes with the final goal of improving water operations, and the implementation of a specific curricula for education/training compatible with the mission of the SWAN project [abstracts in pages 7-9]:

9:00 am – ***SRP and Research – Past, Present and Future*** - *Charlie Ester* (Salt River Project, https://www.srpnet.com/)

10:00 am – ***The scope of academic training and degrees on the University of Arizona: is there an opportunity for an Institute for Open Knowledge?*** - *Simone Rambotti* (Department of Sociology, The University of Arizona, http://sociology.arizona.edu/rambotti).

11:00 am – ***New models of online education and training*** - *Pierre A. Deymier* (College of Engineering, The University of Arizona, http://www.mse.arizona.edu/pierre-deymier).

12:00 – 1:30 pm – **Lunch.** *Location: Arizona Room at the Student Union*

1:30 pm – ***Contributing to a Transatlantic Dialogue on Water: Solutions Development and Implementation*** - *Sharon Megdal* (Water Resources Research Center, University of Arizona, https://wrrc.arizona.edu/sharon-b-megdal).

2:30 pm – Horizon 2020 and the future of INCOLAB Program: EU grants opportunities in Water research and innovation field – *Hélène Leniston* (Centre National de la Recherche Scientifique, CNRS, http://www.cnrs.fr/index.php) [abstract in page 9].

3:30 pm – Feasibility Study Brainstorm.

Keeping in mind the information provided during the day on: i) open knowledge, ii) the eventual implementation of a curricula at the University of Arizona compatible with the mission of the SWAN project, iii) the link between the Universities and water operations, and iv) the funding opportunities to further develop TWD, this session will be dedicated to the discussion on the Feasibility Study, which is the final outcome of the SWAN project.

5:30 pm – Adjournment

Tuesday, November 11

Location: Marshall Building – 5th Floor - Room 531

8:00 am – Arrival/Coffee

8:30 am - 12:00 pm– Transdisciplinary collaboration

This session will be a follow up of the discussion started on the afternoon of Monday including the new elements of the previous sessions. It will be introduced by a talk on transdisciplinary research followed by a discussion on the Feasibility Study.

8:30 am - A Transdisciplinary Research Framework – *Susan W. Harris* (Department of Hydrology and Water Resources, The University of Arizona, http://www.hwr.arizona.edu/users/susanwardharris). [Abstract in page 10].

9:30 am –Feasibility Study Action Plan. Discussion

12:00 pm – Lunch. *Location: Paradise Bakery. 845 N. Park Avenue, Suite 125 (Ground floor of Marshall Building)*

1:30 – 3:00 pm – Scientific presentations of SWAN Teams activities.

Brief presentations of each SWAN team (UA, CNRS, USE, UWE, BAS-NIGGG, UNESCO-IHE) on the progress made since the last meeting, key lines of research of contracted students/staff, plans for future hires and lines of work until the next Progress Meeting in Bulgaria in April 2015.

1:30 pm – UA progress report
1:45 pm – UWE progress report
2:00 pm – USEprogress report
2:15 pm – CNRS progress report
2:30 pm – BAS-NIGG progress report
2:45 pm – UNESCO-IHE progress report

3:00 pm – Planning of Activities for 2015

This session will be dedicated to the planning of activities for the next period of the SWAN project, including the Second Report, 6th Progress Meeting, International Conference, and funding opportunities.

4:30 pm – Adjournment

4:45 – 6:00 pm – Board Meeting/Student Coordination (only SWAN team members)

Wednesday, November 12

TUCSON BASIN CASE STUDY

Location: Marshall Building – 5th Floor - Room 531

This session is a discussion focused on the work conducted in the Tucson Basin Case Study. Ties are subject to change.

8:00 am – Arrival/Coffee

8:30 – Welcome and introduction

9:00 am – Presentation of working papers

10:30 – 11:00 am –Break

11:00 am – Identification of collaboration/cooperation between researchers in the Tucson Basin.

11:30 – Lets create together the story line of the SWAN analysis of water management in the Tucson Basin (PART I)

12:30 pm – **Lunch –** *Location: Marshall Building, Room 531*

1:30 pm – Lets create together the story line of the SWAN analysis of water management in the Tucson Basin (PART II)

3:00 pm– Discussion wrap up: Possible conclusions and questions for further reflection and debate.

3:30 pm – Break

SEMINAR AT THE DEPARTMENT OF HYDROLOGY AND WATER RESOURCES

Location: Harshbarger Building - Room 206

16:00 pm – Developing a common framework for water resources management in the European Union: The experience of the Water Framework Directive – Nuria Hernandez-Mora (Department of Human Geography, University of Seville; SWAN project, http://www.researchgate.net/profile/Nuria_Hernandez-Mora) [abstract in page 11].

5:00 pm – End of the Workshop

Thursday, November 12

VISIT TO CENTRAL ARIZONA PROJECT

http://www.cap-az.com/

**This visit is only for registered attendees

6:15 am – **Departure from Tucson** (northwest Corner N. Park Avenue/2nd Street)

9:00 am – **Arrive at CAP Headquarters** (23636 N 7th St. Phoenix, AZ 85024)

9:00 – 11:30 am – **CAP Headquarters**: Snacks/water provided, CAP presentations, tour of the CAP control center

11:30 am – 1:00 pm – Lunch at a location enroute from CAP Headquarters

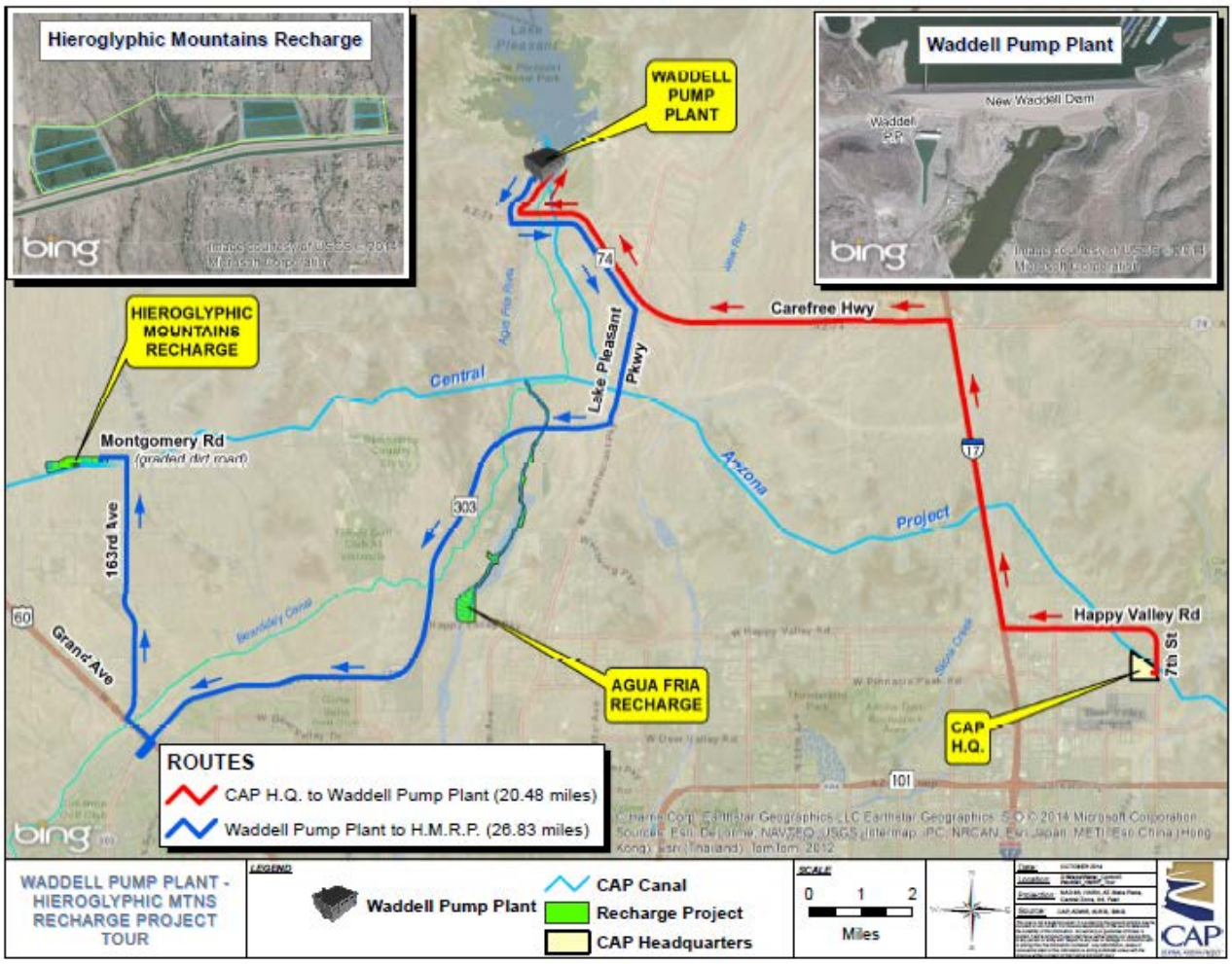
1 pm - 1:30 pm – **Travel to Lake Pleasant** (41835 N Castle Hot Springs Rd Morristown, AZ 85342)

1:30 pm – 2:30 pm – **Lake Pleasant Overlook**: Discuss Lake Pleasant and Waddell Pumping Plant

2:30 pm – 3:00 pm – **Travel to Hieroglyphics Mountains Recharge Facility** (this is the portion of the tour that will have unpaved roads)

3:00 pm – 4:00 pm – **Tour Hieroglyphics Mountains Recharge Facility** (Close to 30600 N 167th Dr. Surprise, AZ 85387)

4:00 pm – **Leave from Hieroglyphics Mountains Recharge Facility to Tucson**


Hieroglyphic Mountains Recharge
Waddell Pump Plant
New Waddell Dam
WADDELL PUMP PLANT
HIEROGLYPHIC MOUNTAINS RECHARGE
AGUA FRIA RECHARGE
CAP H.Q.
Carefree Hwy
Central
Lake Pleasant Pkwy
Montgomery Rd
(graded dirt road)
163rd Ave
Grand Ave
Arizona Project
Happy Valley Rd
7th St
74
303
17
60
101
ROUTES
CAP H.Q. to Waddell Pump Plant (20.48 miles)
Waddell Pump Plant to H.M.R.P. (26.83 miles)
WADDELL PUMP PLANT - HIEROGLYPHIC MTNS RECHARGE PROJECT TOUR
LEGEND
Waddell Pump Plant
CAP Canal
Recharge Project
CAP Headquarters
SCALE
0 1 2
Miles

ABSTRACTS OF THE PRESENTATIONS

SRP and Research – Past, Present and Future

Charlie Ester

Manager
Water Resource Operations
Salt River Project

SRP has a long history of working with Universities. SRP supports Arizona universities by funding projects for dual benefits. Recently funded studies within SRP's Water Resource Operations cover a wide range of topics including river flow reconstructions using tree-rings, weather forecast modeling, climate change, and snow water equivalent. While many of the studies have directly influenced how water is managed at SRP there are many challenges when working exclusively with one university. Contradictory results can limit the utility of individual studies. Therefore, SRP is exploring the development of a research collaborative that includes state universities and other research institutions. The goals of the collaborative are: addressing research objectives with an integrated effort; creating efficiency by avoiding unnecessary duplication; incorporating top-level and cutting edge research; eliminating barriers for researchers to work across universities; and, creating transparency between research institutions.

The scope of academic training and degrees on the University of Arizona: is there an opportunity for an Institute for Open Knowledge?

Simone Rambotti

PhD student
School of Sociology
University of Arizona

In June 2014 the Oxford English Dictionary revised the entry for citizen, adding the expression citizen science, defined as "scientific work undertaken by members of the general public, often in collaboration with or under the direction of professional scientists and scientific institutions." The apparent democratization potential intrinsic to new technologies drove a renewed interest in scientific openness, and similar definitions arose: crowd science, crowd-sourced science, civic science, networked science, and Science 2.0. While the terms (and the trend) are new, the practice is old: scientific research, before being institutionalized and embedded in public and private universities and research centers (which have been called big science), was often voluntary and self-financed (little science.) Indeed, it is has been argued that this new public wave

of scientific participation might mean a return to little science. The integration of these two frameworks is certainly promising, especially with regard to the enhanced capability of data collection, but it also presents some challenges that must be taken into account. The first part of the presentation provides an overview of some of these challenges, such as the methodological and ethical issues connected to the participation of nonprofessionals to the scientific research, and the role of standard setting, the evaluation of findings, and the opportunity of training. Especially related to the last point, the second part of the presentation is a work-in-progress review of the resources for open knowledge already available at the University of Arizona, in order to determine whether and how it is possible to build and offer a curriculum for training that is compatible with the specific goals and the overall mission of the SWAN project.

New models of online education and training

Pierre A. Deymier

Director, School of Sustainable Engineered Systems
Head and Professor, Department of Materials Science and Engineering
College of Engineering
University of Arizona

We present to prototypical models of on-line education and training. The first model is an example of industry-academia partnership in undergraduate on-line education that could be transposed readily to the “water” industry. This distance learning program provides Intel's Fab/Sort Manufacturing (FSM) employees throughout the world with the flexibility to engage in this education opportunity while managing their work and life needs. Another unique feature is that part of the curriculum is taught exclusively by industry personnel to industry-students allowing protection of intellectual property. The second model is an on-line graduate Master of Engineering in Innovation, Sustainability and Entrepreneurship (ME-ISE). Contrary to the traditional discipline-based Master of Science (MS), ME-ISE addresses the need for education in specific topics. The topical ME-ISE is geared toward students and industry professionals, who are interested in the translation and transfer of technologically-promising research discoveries into sustainable technologies and processes. It offers a combination of business and policy-oriented classes and engineering courses to help engineers bridge the gap between innovative ideas and sustainable economic development strategies. Development of a ME-ISE on the topic of water is under discussion. This model enables wide dissemination through trans-border education and training.

Contributing to a Transatlantic Dialogue on Water: Solutions Development and Implementation

Sharon B. Megdal

Director
Water Resources Research Center (WRRC)
University of Arizona

This lecture will address water issues and challenges that regions around the world are facing. It will consider how solutions to them are being developed and how the University of Arizona has contributed and will continue to contribute to development and implementation of solutions. The lecture will discuss how communication among the parties involved in the various phases of solution identification and deployment is key to successfully managing water resources in a manner that is acceptable to the oft-competing water-using sectors.

Horizon 2020 and the future of INCOLAB Program: EU grants opportunities in Water research and innovation field

Hélène Leniston

Project and Business Manager
Centre National de la Recherche Scientifique, CNRS

Within the 7th Framework Program, the European Commission launches various pilot tools focused on International Cooperation for Research and Innovation. In line with this, the SWAN project is an example of an American/ European collaboration awarded by the EC, coordinated by the CNRS and the University of Arizona; SWAN aims to build a *Network for a Transatlantic Dialog on Water,* which design of is currently under examination process.

Horizon 2020, the 8th Framework Program, is currently the main European research funding Program launched by the EC. It will grant research and innovative projects, either individual or collaborative, with nearly 80 billion of euros over the next seven years (2014-2020). The Program is based on three pillars: Scientific Excellence, Industrial Leadership and Societal Challenges.

With no nationality criteria, and also with some funding opportunities for non-European Countries, Horizon 2020 offers several actions of potential great interest for the water topic: calls for bottom-up driven research and training networks, research/innovation partnerships, staff exchanges. One Societal Challenge of the Program is entirely dedicated to the “Climate action, environment, resource efficiency and raw materials”; a specific call is also designed for water focused projects.

A Transdisciplinary Research Framework

Susan W. Harris

MS Student
Department of Hydrology and Water Resources
University of Arizona

A general discussion regarding the literature that explores the development of a transdisciplinary research process that integrates the abilities of physical and social scientists to study and resolve water issues. The successful implementation of this process should start with a collaborative identification of a water problem and the specific factors that contribute to the complexity of the water issue. The process would have each discipline use its specialized knowledge and training to identify and address the issues within its expertise.

Social scientists would study and provide information necessary to the resolution of the problem on topics such as:

(1) Federal, state, municipal and local government and private and individual structures governing access to, ownership and use of water rights

(2) Formal and informal dispute resolution procedures and authorities, ranging from a court system to private dispute resolution to informal stakeholder partnerships.

(3) Costs for water including permits, water fees, connection fees; direct and indirect costs for changing access to ownership of and use of water rights; permissible sale or use of effluent; and water banking.

(4) The policies and mechanisms to allocate water and water rights among stakeholders such as consumers, the environment and business.

(5) Public policy considerations such as the viability of changing land use and regulating non-essential uses of water for purposes such as golf courses, lakes, fountains, swimming pools and lawns.

Physical scientists would study and provide information necessary to the resolution of the problem on topics such as:

(1) The determination of the current and future availability of water in terms of quantity and quality.

(2) The transmission, storage and delivery of water whether by natural or engineered systems.

(3) The impact on the dynamic complex of plant, animal, and microorganisms communities and the nonliving environment which interact as a functional unit and the resulting impact on benefits that people receive from that ecosystem.

(4) Management of discharge and runoff and wastewater treatment.

The final product would combine the study results of the scientists into a single coherent set of solutions.

Developing a common framework for water resources management in the European Union: The experience of the Water Framework Directive

Nuria Hernández-Mora

Professor
Department of Human Geography
University of Seville, and SWAN Project

The Water Framework Directive (WFD) approved by the European Union in December 2000 represents an ambitious attempt to provide a common framework for water policy for all 28 members of the European Union. The WFD integrated previous water quality directives and has been complemented by the Groundwater Directive (2006) and the Floods Directive (2007).

The coordinated implementation process of the WFD in EU member states, with different political, legal and cultural traditions and a wide range of bioregional characteristics has been challenging. The required coordination of plans and measures at the river basin scale, often across multiple national boundaries, is an added challenge. It represents an ambitious example of environmental legislation with ecological, territorial, socioeconomic and political implications.

The presentation will briefly introduce the institutional context and policy making process in the EU, describe the WFD's main characteristics as well as the landmarks of the Directive's Common Implementation Strategy, highlight the main challenges encountered, the lessons learned after the first implementation cycle and discuss some of the main proposals for its revision and the challenges ahead.