

WATERWORKS 2017 RDI FUNDED PROJECTS BOOKLET

Project: An integrative information aqueduct to close the gaps between global satellite observation of water cycle and local sustainable management of water resources

iAqueduct



Outcomes and expected impact:

-Impact of the proposal

iAqueduct will contribute to each of the expected impacts mentioned in the Call Announcement as summarized below.

Sub-theme addressed: iAqueduct addresses Theme 3 - Supporting tools for sustainable integrative management of water resources, as well as Sub-theme 2.3 - Connecting science to society in order to develop approaches to influence stakeholders (in particular citizens) towards desirable behaviour (Water JPI 2018 Joint call, Closing the Water Cycle Gap – Sustainable Management of Water Resources);

UN SDG targets: iAqueduct contributes to the implementation of key UN Sustainable Development Goals (SDGs): SDG 6, SDG 13 and SDG 1, by developing an integrative information aqueduct to close the gaps between global satellite observation of water cycle and local sustainable management of water resources and applying the project results in real time water management practices (e.g. the stress test in the Dutch Delta plan). iAqueduct toolbox will be transferred to the water authorities for water management and companies for developing business for irrigation management (in Spain, Italy and the Netherlands). The involvement of the partners in international fora ensures the contribution of the developed knowledge, data and toolbox to the relevant UN bodies (e.g. UN World Water Assessment Programme);

Beyond the State-of-the-Art: iAqueduct will enable test and develop beyond the state-of-the-art approaches to derive local field scale water states information (precipitation, evapotranspiration and profile soil moisture) using satellite, UAS and in-situ observations, as well as modeling and big data analytics tools for water management under climate change;

Case studies: Several case studies are proposed at local level and coordination ensured by engaging water authorities and companies (in Spain, Italy and the Netherlands); these case studies cover a variety of climates, thus ensuring the generality of the methods developed;

Connect to stakeholders: water authorities and companies (in Spain, Italy and the Netherlands) are involved in the proposal and project execution;

Gender dimension: In all WPs we will ensure gender balance by engaging female and male researchers in the relevant WPs (2 WPs are led by female

partners, each partner will strive to engage one female investigator); International participation in water R&I in different environments: From north to east and south Europe, five different but well monitored field sites with various climatic regimes, hydrological and soil conditions are selected and partners with complementary expertise are involved, the inclusion of Tel Aviv University further enhances the international participation.

-Expected outputs:

The main expected outputs are:

(i) iAqueduct outputs will include a database of measurements (satellite/UAS-data/soil moisture/PTF etc.) for the 5 experimental sites as well as the corresponding open source publications at ISI journals (we anticipate ca. 15 publications 2 years after the completion of the project). The generated codes and software will be integrated in the MajiSys open source system for distribution and wider use. Training of junior researchers at PhD and postdoc level, joint experiments and publications in the 6 WPs as well as internships at each other partner's by (to be recruited) junior researchers will strongly benefit the exchange of knowledge by mobility. Three workshops (incl. analyses and suggestions for measures for the drought events in 2018) will be organized with stakeholders;

(ii) iAqueduct will enhance innovation capacity with substantial impacts not mentioned in the Announcement. The scaling up to pan-European level of iAqueduct results will take place under the aegis of the COST action Harmonization of UAS techniques for agricultural and natural ecosystems monitoring (HARMONIOUS) which undoubtedly would enhance pan-European innovation capacity;

(iii) iAqueduct will support an end-to-end system, which ingests scientific data and translates into tailored water productivity information for end-users/stakeholders across scales and levels for their decision makings.

Expected research results to communicate and disseminate (in very general terms)	Target groups for communication and dissemination activities:
1. Exploitation: WP6 is specifically designed to address the exploitation issue. Dissemination and communication will take place for the use of generated knowledge and tools by water managers, companies and farmers for actual sustainable water management (training for iAqueduct toolbox will be organized for stakeholders in different countries; case analyses for the drought events in 2018).	water managers, companies and farmers
2. Added-value of the partnership to Water RDI: iAqueduct complements the actions developed under ESFRI by coordinating a set of European research groups and sites for studying soil and water processes using space technologies, UAS and in-situ observations	- Water RDI - COST Action Harmonization of UAS techniques for agricultural and natural ecosystems monitoring

<p>and the scaling up to pan-European level under the aegis of the COST Action Harmonization of UAS techniques for agricultural and natural ecosystems monitoring (HARMONIOUS) which is highly effective given the fact that there are 70 participating institutions from 32 countries in HARMONIOUS. This has a strong added-value of the partnership to Water RDI and can serve as a prototype ESFRI for water which does not exist in Europe so far.</p>	<p>(HARMONIOUS), which is highly effective given the fact that there are 70 participating institutions from 32 countries.</p>
<p>3. iAqueduct will be further linked to international programmes such as GEWEX and GEO. The project coordinator Prof. Bob Su is appointed as GEWEX SSG member and establishes/maintains ITC GEO Land-Atmosphere Interaction Observation Networks at Eurasia continental scale. Such coordination will be greatly enhanced, by offering the additional sites for calibration and validation of global satellite water cycle products.</p>	<p>GEWEX and GEO</p>
<p>Experiments / Case studies (if any): location, type of experiments: The In-situ Soil Moisture Soil Temperature monitoring Network, UAS, CalVal campaign of Satellite/UAS Data and other relevant activities, to close the gaps between global satellite observation of water cycle and local sustainable management of water resources, will be carried out in the following sites:</p> <ul style="list-style-type: none"> - Twente, the Netherlands; - Zala, Hungary; - Alento, Italy; - Corleto, Italy; - Barranco del Carraixet, Spain; - Haogen, Israel 	<ul style="list-style-type: none"> - Water boards in NL(Vechtstromen) - SME company in NL (Cosine) - Research Institute in NL (Deltares) - ‘Velia’ Consortium Authority of Land Reclamation (which manages the dams and the irrigation district in Alento, Italy) and the “Cilento and Diano Valley” National Park (the largest park in Italy); - Water Authority in Spain (Confederacion Hidrografica del Jucar - CHJ) - SME company in Spain (Geosystem)
<p>Water Policy context / project contribution to policies (National, European, International – UN SDGs):</p> <p>Sub-theme addressed: iAqueduct addresses Theme 3 - Supporting tools for sustainable integrative management of water resources, as well as Sub-theme 2.3 - Connecting science to society in order to develop approaches to influence stakeholders (in particular citizens) towards desirable behaviour (Water JPI 2018 Joint call, Closing the Water Cycle Gap – Sustainable Management of Water Resources);</p>	

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