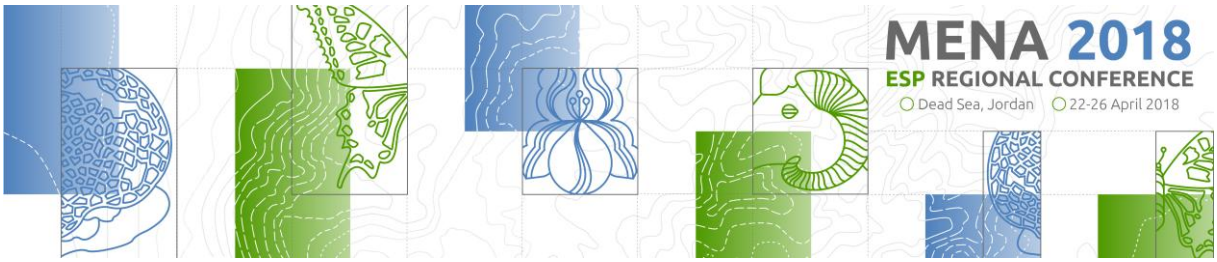


BOOK OF ABSTRACT

I. SESSION DESCRIPTION

ID: T14

Title of session:

Ecosystem services supply-demand gaps and ecosystem service mapping in the MENA region

Hosts:

	Title	Name	Organisation	E-mail
Host:	Dr.	Mahmoud Nady	PSAS-Beni Suief Uniersity	mnady@zewailcity.edu.eg
Co-host:	Dr.	Oliver Schlein	GIZ- Amman	oliver.schlein@giz.de

Abstract:

The social demand of different Ecosystem Services (ES) is dramatically changing with the changes of human habits, practices and needs (Wolff et al., 2017; Alcamo et al., 2005). Changes in human life styles and modernization can lead to a critical level of depletion of natural resources and ES. These changes must be understood in order to match the supply of services with the actual demand of the societies, in terms of quantities, qualities and location (I.R. Geijzendorffer & Roche 2014; Burkhard et al., 2012; Paetzold et al., 2010). There is a growing need to estimate the role of such lifestyle changes on the ES demand. Moreover, it is very important to define the direct and indirect impacts of these changes on the communities living in areas where the services are originally supplied, and reversely how the demand steer changes of different landscapes.

Different themes are welcome in this session, such as:

- Understanding the actual ES supply-demand patterns at the MENA region
- Assessing the mismatches between supply and demand of the provisioning ecosystem services such as water, crops and energy
- Explore the direct and indirect interaction between ES demand levels and landscape changes in the MENA region
- Illustrate how socio-economic and lifestyle factors steer ES demand (such as raising the demand of cultural ES and the increasing the consumption of food and products)
- How can decision and policy makers relay on the data of ES demand-supply gaps for better sustainable planning

- How spatially can ES demand tracked in a highly telecoupled world
- How ES demand impacts communities living in the services providing areas?
- Discussing the different proposed methodologies to identify, predict and assess the societal demand of ES and how to overcome the problem of data shortage in the MENA region

Goals and objectives of the session:

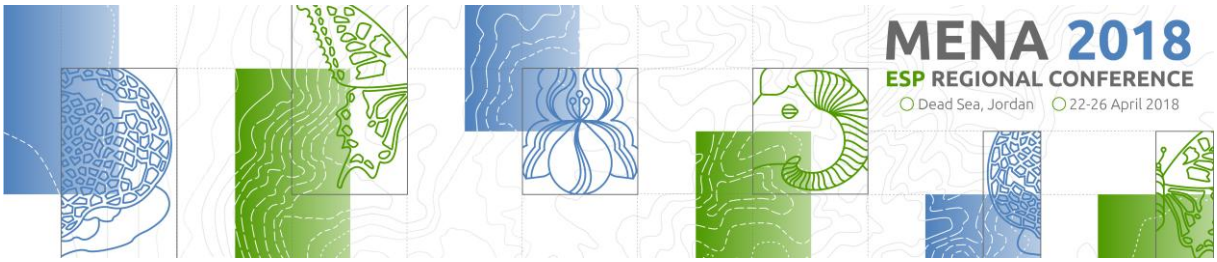
This session's objectives are firstly to present the concept of ES demand as a powerful tool for decision making and sustainability plans in the MENA region. Secondly, to include more young researchers in these studies, targeting a future comprehensive assessment of our societal demand of ES. Finally, to engage different stockholders for a better understanding of our actual supply and demand of ES to define the areas of mismatches.

Planned output / Deliverables:

- The session will collect together different backgrounds, where it will be a spark of a network of scientists interested in ES demand.
- The session is going to give recommendations out of the proposed studies for including the ES demand assessments in the environmental plans.
- Suggested methodologies will be collected to help young scientists to quantify, indicate and map ES demand

Voluntary contributions accepted:

YES

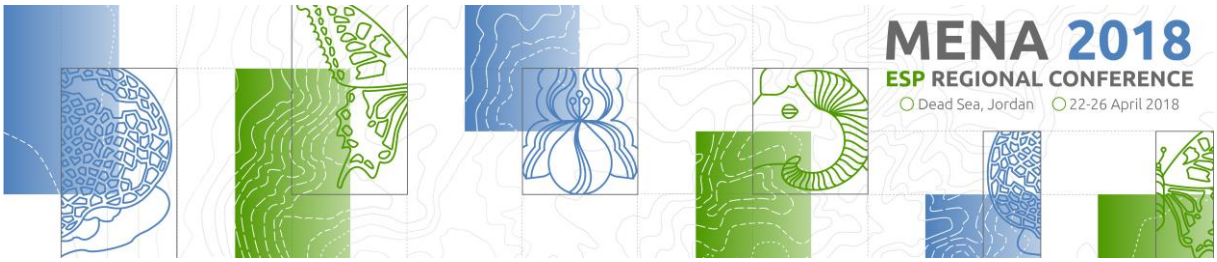


II. SESSION PROGRAM

Date of session: 23 April
Time of session: 13:30 – 15:30

Timetable speakers

Time	First name	Surname	Organization	Title of presentation
13:30	Nady	Mahmoud	PSAS, Beni suief University. Egypt	ES supply-demand mapping and challenges in the MENA region
13:45	Muna	Saba	National Center for Agricultural Research and Extension (NCARE), Jordan	Geospatial analysis of deforestation in Northern Jordan
14:00	Fatima	Ali	National Centre for Research	Mapping spatial relationship between ecosystem areas and ecosystem services to support rehabilitation of social-ecological system.
14:15	Abeer	Albalawneh	National Center for Agricultural Research and Extension (NCARE), Jordan	Using Landscape Metrics Analysis to Assess Water Harvesting Potential Sites and Considering their Ecosystem Services in Jordan
14:30	Group Discussion			



III. ABSTRACTS

1. Type of submission: ***Voluntary contribution***

T. Thematic Working Group sessions: T14 ES supply-demand and mapping

Using Landscape Metrics Analysis to Assess Water Harvesting Potential Sites and Considering their Ecosystem Services in Jordan

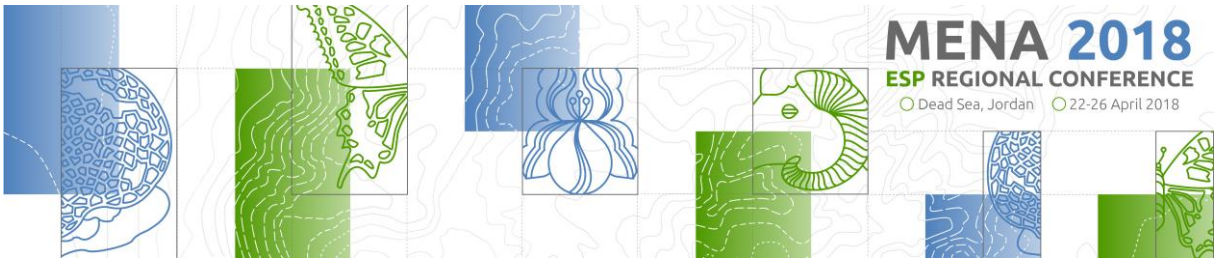
Presenting author: Abeer Albalawneh

Affiliation: National Center for Agricultural Research and Extension (NCARE), Jordan

Contact: aberfer@yahoo.com

Jordan is characterized as a "water scarce" country. Therefore, conserving ecosystem services such as water regulation and soil retention is challenging. In Jordan, rainwater harvesting has been adapted to meet those challenges. However, the spatial composition and configuration features of a target landscape are rarely considered when selecting a rainwater-harvesting site. This study aimed to introduce landscape spatial features into the schemes for selecting a proper water-harvesting site. Landscape metrics analysis was used to quantify 10 metrics for three potential landscapes (i.e., Watershed 104 (WS 104), Watershed 59 (WS 59), and Watershed 108 (WS 108)) located in the Jordanian Badia region. Results of the metrics analysis showed that the three non-vegetative land cover types in the three landscapes were highly suitable for serving as rainwater harvesting sites. Furthermore, Analytic Hierarchy Process (AHP) was used to prioritize the fitness of the three target sites by comparing their landscape metrics. Results of AHP indicate that the non-vegetative land cover in the WS 104 landscape was the most suitable site for rainwater harvesting intervention, based on its dominance, connectivity, shape, and low degree of fragmentation. Our study advances the water harvesting network design by considering its landscape spatial pattern.

Keywords: landscape metrics; rainwater harvesting; Ecosystem Services; analytic hierarchy process



2.Type of submission: ***Voluntary contribution***

T. Thematic Working Group sessions: T14 ES supply-demand and mapping

Geospatial analysis of deforestation in Northern Jordan

|*Authors: Muna Saba*

Affiliation: NCARE, Jordan

Contact: msaba_ncartt@yahoo.com

Forests face great challenges in the dry areas as they are prone to degradation, drought and climate change. In Jordan, forests cover less than 1% of the country, mainly, in areas receiving more than 400 mm of annual precipitation.

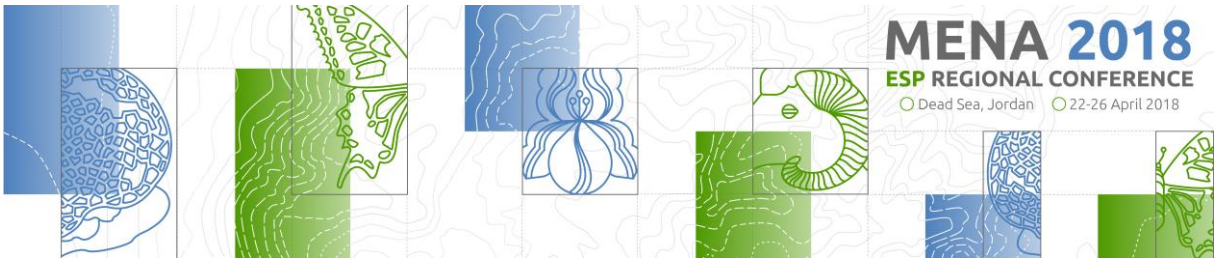
The Google Earth Engine, which is a cloud-based geospatial analysis platform was used to visualize and analyze historical satellite images in an attempt to track forest land cover changes over the past 30 years, identify the affected areas, and point out the types of the threats for further action.

Normalized Difference Vegetation Index (NDVI) mean summer values for the period (1986-2016) using multi-source images of LANDSAT5 and LANDSAT7. The value of 0.3 NDVI was used as a threshold to classify 743.0 km2 study area of which only 20.1% was classified as forests in 1986.

Five period means (between 1986 and 2016) were used to represent the study period and eliminate annual variations. Change in NDVI values between different periods were mapped in 9 classes. These classes were useful in distinguishing areas of decreased, no change, and increased vegetation.

Results showed that the forest area has been subjected to an overall deforestation rate 17.8%. Map of differences between 2016 and 1986 indicated that the NDVI values of 40.7%, 30.6% and 28.7% were decreased, had no change or increased vegetation, the later may be due to afforestation projects.

Major threats to the forest areas are associated with expansion in cultivated lands especially in olive orchards, urbanization, forest fires and removal for wood. This analysis provides a suitable approach to monitor the deforestation process but further studies with field verification are recommended. Results can help policy makers with designing appropriate forest conservation and protection measures.



Keywords: NDVI, deforestation, Landsat, Land use/Land cover Change

3.Type of submission: ***Voluntary contribution***

T. Thematic Working Group sessions: T14 ES supply-demand and mapping

Mapping spatial relationship between ecosystem areas and ecosystem services to support rehabilitation of social-ecological system.

Author(s): Fatima Ali

Affiliation: National Centre for Research, Sudan

Contact: fatti-avectoi@hotmail.com

Good environmental management is very crucial in achieving sustainable development especially in Sudan a country suffering from conflicts related to environment degradation and poor management of natural resources. The forests in the Sudan have economical, ecological, and recreational values, however the forests area declined from (23570.313 ha) in (1990) to (19209.938 ha) in (2015) (FRA, 2015). With annual deforestation average 2.7%, in years 2000 to 2015 (WorldBank, 2017). This degradation affect the ecosystem ability to deliver its goods and services, data regarding ecosystem services in Sudan is not available (FRA, 2015). Thus the rehabilitation of the ecosystem is highly needed as well as research and information about the ecosystem services. The session proposes mapping the ecosystem areas and Ecosystem Services could help the ecological rehabilitation projects.

The ecosystem areas mean Spatial Providing Area SPA, Spatial Benefiting Area SBA, and Spatial Connecting Area SCA (Walz, Syrbe, & Grunewald, 2017). Ecosystem Services (ES) according to Millennium Ecosystem Assessment (MA) classification; provisioning, supporting, regulating and cultural services (MA, 2005).

To define the spatial relationship between ecosystem and ecosystem services the session suggests combination of three aspects:

Ecosystem services concept; to define and classify the ecosystem areas and ecosystem services.

Local ecological knowledge; how the local people define the ecosystem and its services, what the local knowledge related to management of the ecosystem.

Geospatial analysis; ecosystem spatial analysis, integration of different types of data.