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Title:

Characterization of Potential Springs in the Lower Colorado Desert of Southern California using Satellite Radar and Landsat Time Series Analysis

Journal Info.:

Name: International Journal of Advanced Remote Sensing & GIS

URL: <http://technical.cloud-journals.com/index.php/IJARSG/article/view/Tech-675>Volume

(Number): Volume 5 (Year 2016)

Issue (Number): N/A

Season: None

Name of Journal Publisher: Cloud Publications

Journal Publication Date: September 30, 2016

pp. 1896-1907

Summary:

Renewable energy development in southern California is receiving increasing attention due to potential impacts on wildlife habitats and water sources. This study was designed to quantify and map, for the first time, sub-surface water sources from springs in the Lower Colorado Desert area of southern California using satellite radar data and 30 years of Landsat satellite image data. Synthetic Aperture Radar (SAR) data was used to identify sub-surface water sources not already documented as springs or seeps in the National Hydrography Database. Landsat imagery starting in 1985 was used to characterize vegetation growth patterns at these suspected spring locations detected from SAR analysis. Results showed a total of 104 potential spring locations across the Lower Colorado Desert study area, 19 of which were detected within Solar Energy Zone (SEZ) development boundaries, roughly evenly split between Riverside East and Imperial East, and 13 of which (both inside and outside SEZs) showed relatively high green vegetation index values over the period of 1985 to 2015 that would depend on non-precipitation water sources associated with active springs.

Key Words: Radar; Landsat; Surface Water; Springs; Seeps; Solar Energy Development; Lower Colorado Desert; DRECP