

Kyoto & Carbon Initiative

Desert & Water theme: *Water prospecting & Desertification*

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K&C Initiative:

Desert and Water theme

- **Water prospecting in Africa and Arabia**
- **Desertification in Africa and Central Asia**
 - > to be presented by **Paolo Pasquali**

TEAM: Ph. Paillou (OAB - France)

T. Farr (JPL - USA)

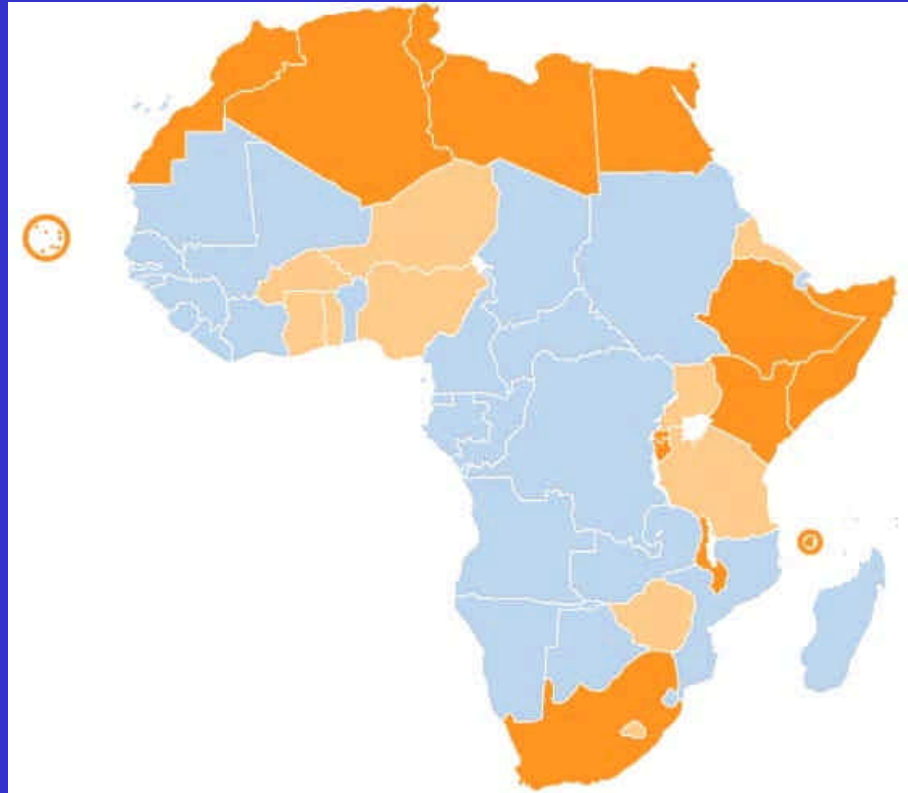
F. Holecz, P. Pasquali (SARMAP - Switzerland)



A. Rosenqvist (EORC - Japan)

Freshwater in the World

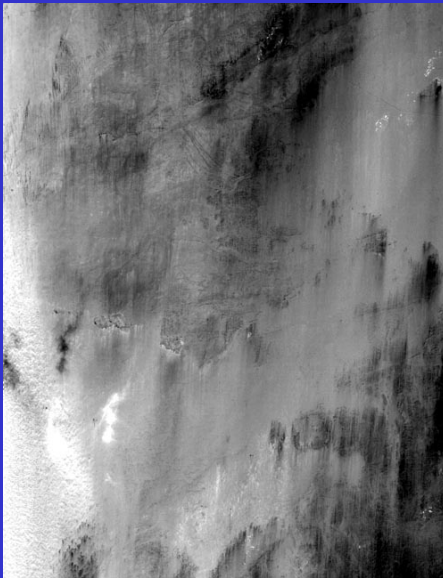
- **United Nations: Sustainable Development (1992)**
 - > **AGENDA 21 - CHAPTER 18: “Protection of the Quality and Supply of Freshwater Resources: Application of Integrated Approaches to the Development, Management and Use of Water Resources”**
- **Second World Water Forum 2000, The Hague**
 - > **MINISTERIAL DECLARATION ON WATER SECURITY**
- **International Freshwater Conference 2001, Bonn**
 - > **WATER, KEY TO SUSTAINABLE DEVELOPMENT**
- **WSSD 2002 Johannesburg -> CEOS WSSD follow-up**
 - > **NO WATER NO FUTURE: A Water Focus for Johannesburg**
 - > **FRESHWATER: A Global Crisis of Water Security and Basic Water Provision**

The Future for Africa: 2025



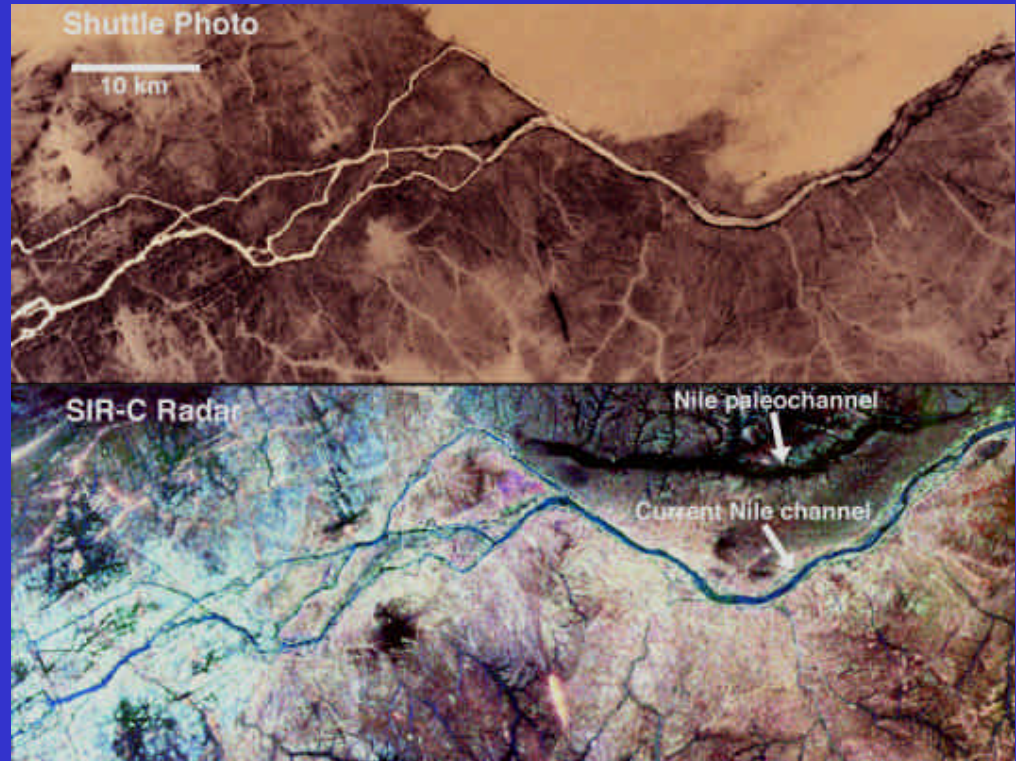
-  Water scarcity in 2025: less than 1000m³/person/year
-  Water stress in 2025: 1000 to 1700m³/person/year

Water prospecting in arid Africa



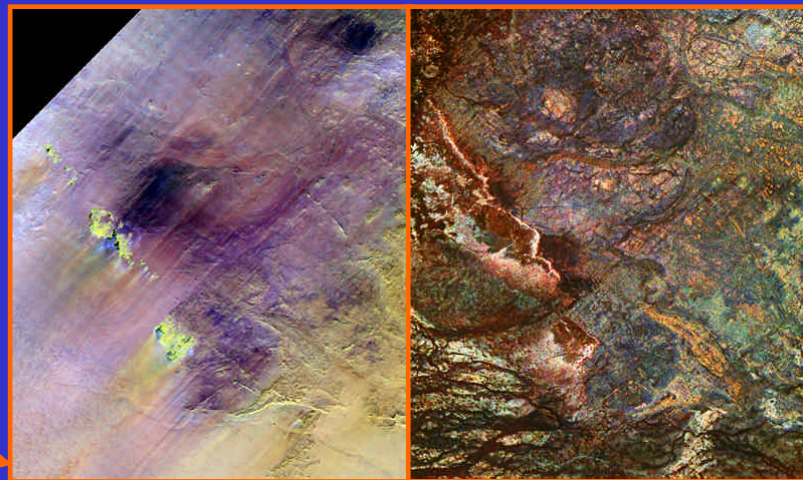
Potential of SAR:

Global Mapping of Subsurface Geology



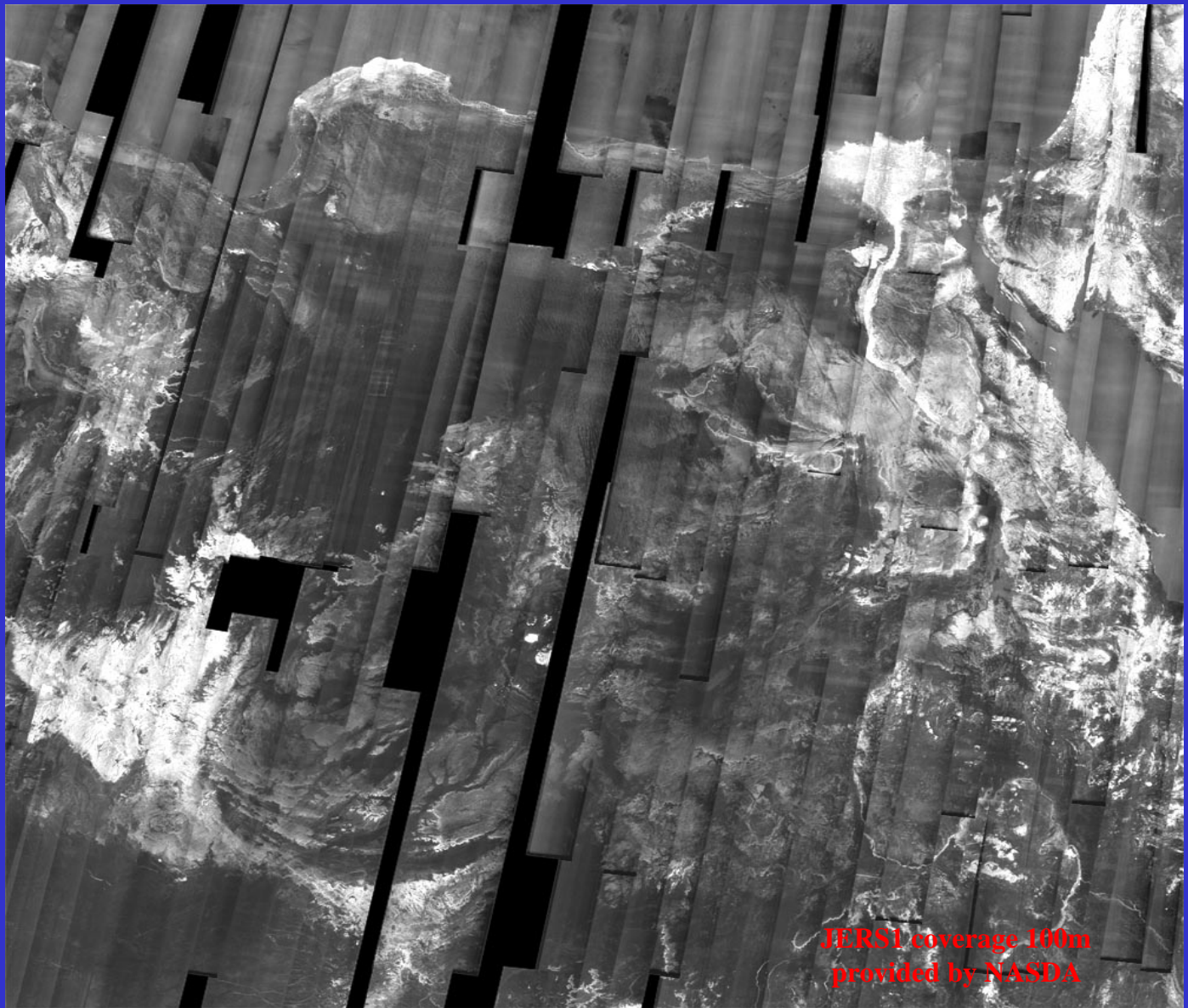


STEP 1: *Eastern Sahara (2002-2003)* **JERS-1 SAR archives**



1600 JERS-1/SAR scenes (L-band) > 97 Go
+ Landsat 7 ETM+ quicklooks (240m)

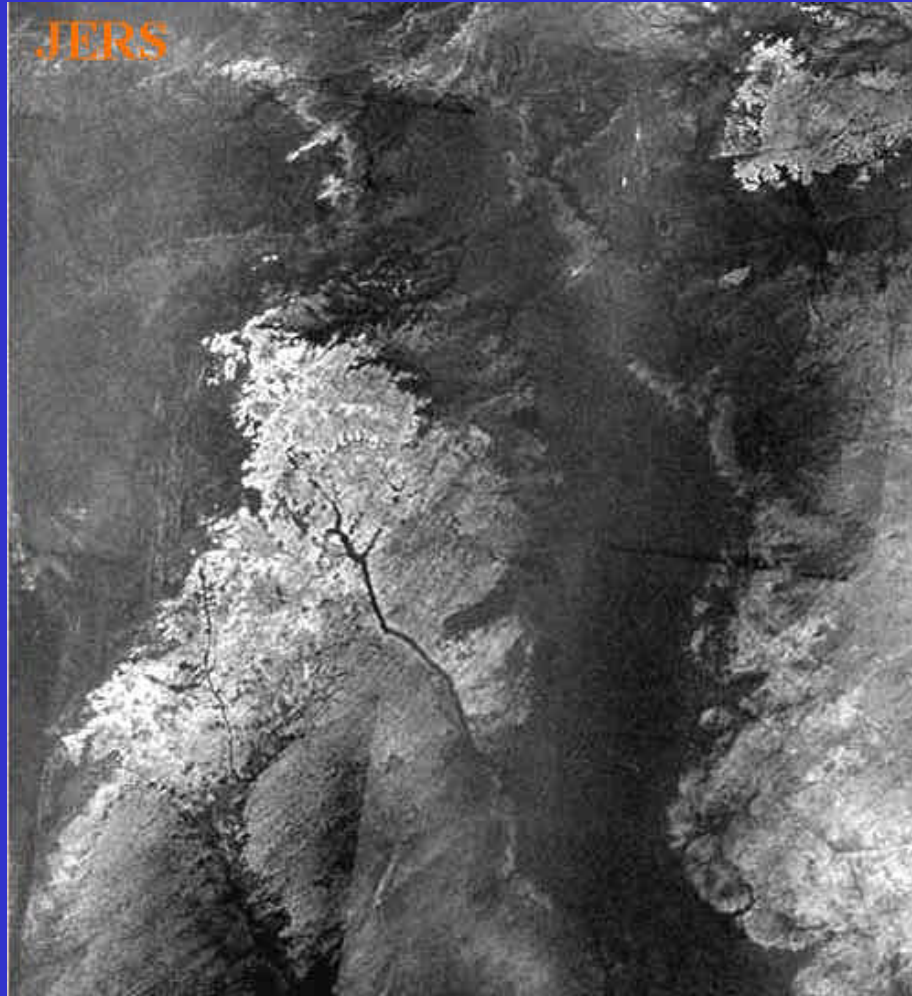
100m mosaic completed July 2003



**JERS1 coverage 160m
provided by NASDA**

« *New Geology* »

(110 x 105km, 250m resolution)





STEP 2: *Sahara + Arabia (2004-2006)* ALOS/PALSAR dual-pol data

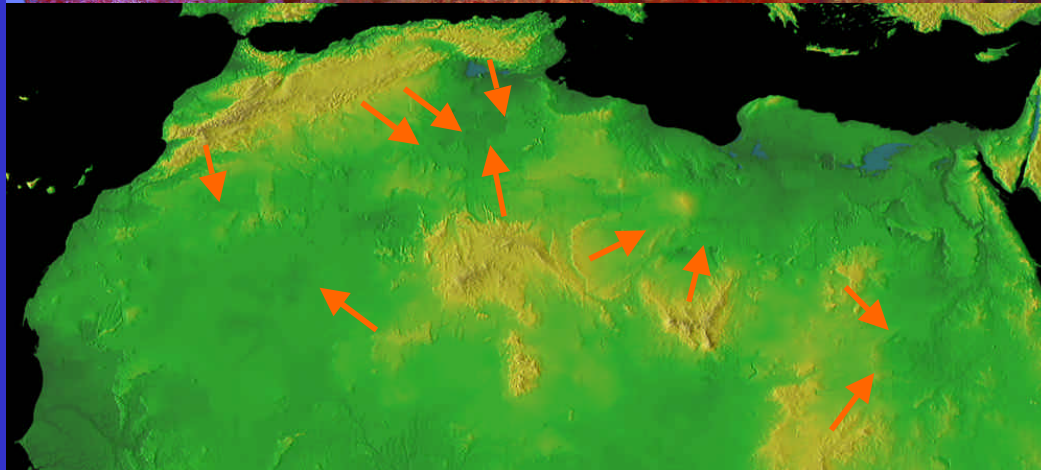
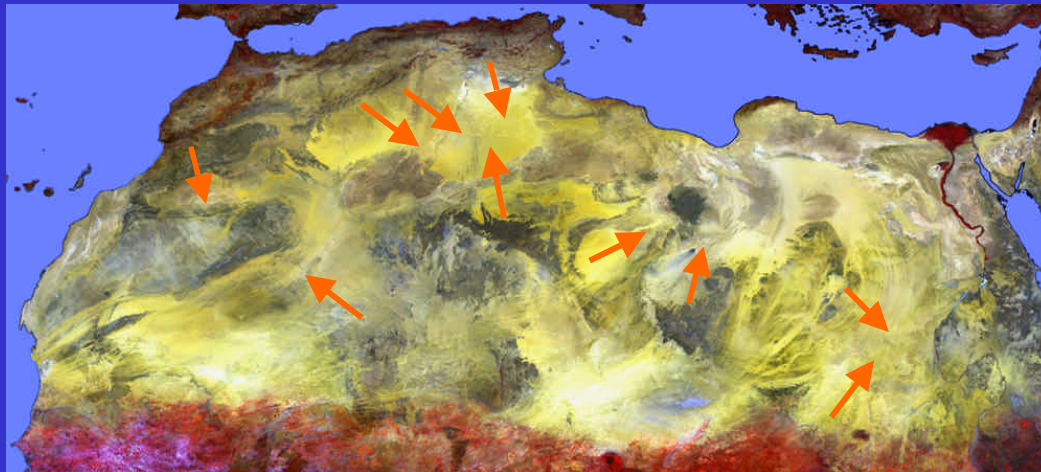
> 6000 PALSAR scenes

+ visible coverage (240m)

Landsat 7

+ global DEM (90m)

SRTM



INPUT DATA

JAXA

PALSAR strips: HH+HV 34 deg. (+ 43 deg.)

slant range

50m resolution

acquisition 6-7 2005/2006 (E1+E2+D7)

USGS/JPL

Landsat 7 ETM+ quicklooks (240m)

SRTM 1x1 deg. coverage (90m)

OUTPUT PRODUCTS

Geocoded PALSAR mosaics (-> 50 m -> 250 m) = OAB + JAXA
+ visible counterpart (Landsat 7 ETM+ -> 250 m)
+ SRTM DEM (-> 250 m)



WWW access to a GIS database (Sahara +Arabia @250m) = FAO ?
-> Wide access for the international community
-> Tool for defining water prospection strategies



“Geo-radar” maps with geological interpretation = End User
-> New start point for water prospecting
-> New inputs for hydrogeological modeling