

**Human exploration and
permanent settlements and
the role of planetary terrestrial
analogues**

Gian Gabriele Ori

**Ibn Battuta Centre, Université Cadi Ayyad, Marrakech, Morocco
and
Int'l Research School of Planetary Sciences,
Universita' d'Annunzio, Pescara Italy**

What is exploration?

It is to physically reach a site

... by “camels”



... by cars.....



... by choppers.....



... by rovers.....



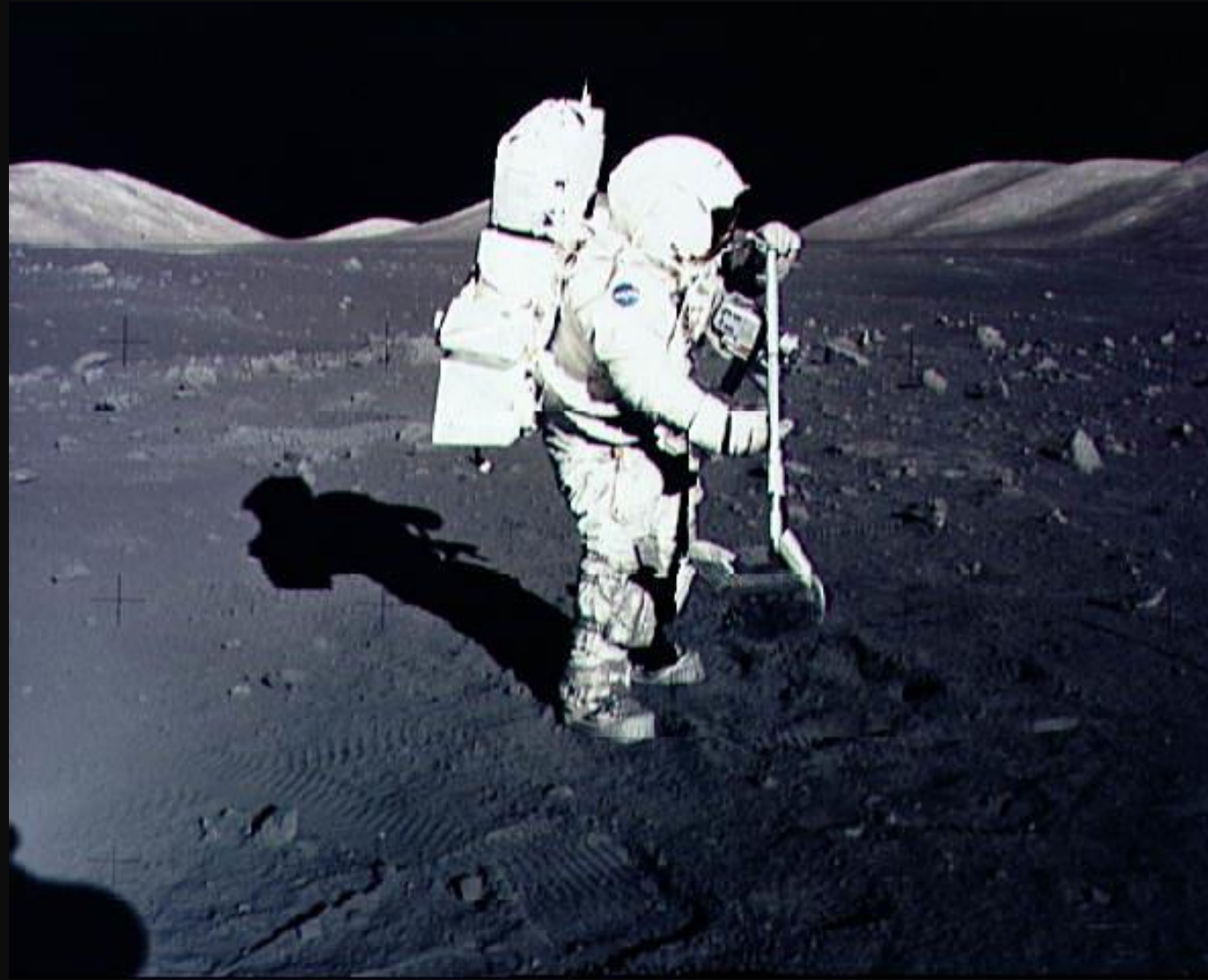
... by any other means.....



Terrestrial analogues are of paramount importance due to the need to test science, instruments, operations, etc.

- Science: small outcrops or sites
- Instruments: small to medium (1 km²) test ranges
- Human and robotic operations: very large test ranges





Analogues are necessary for testing operations, scientific activities, settlements, logistics and our desert are rather suitable.

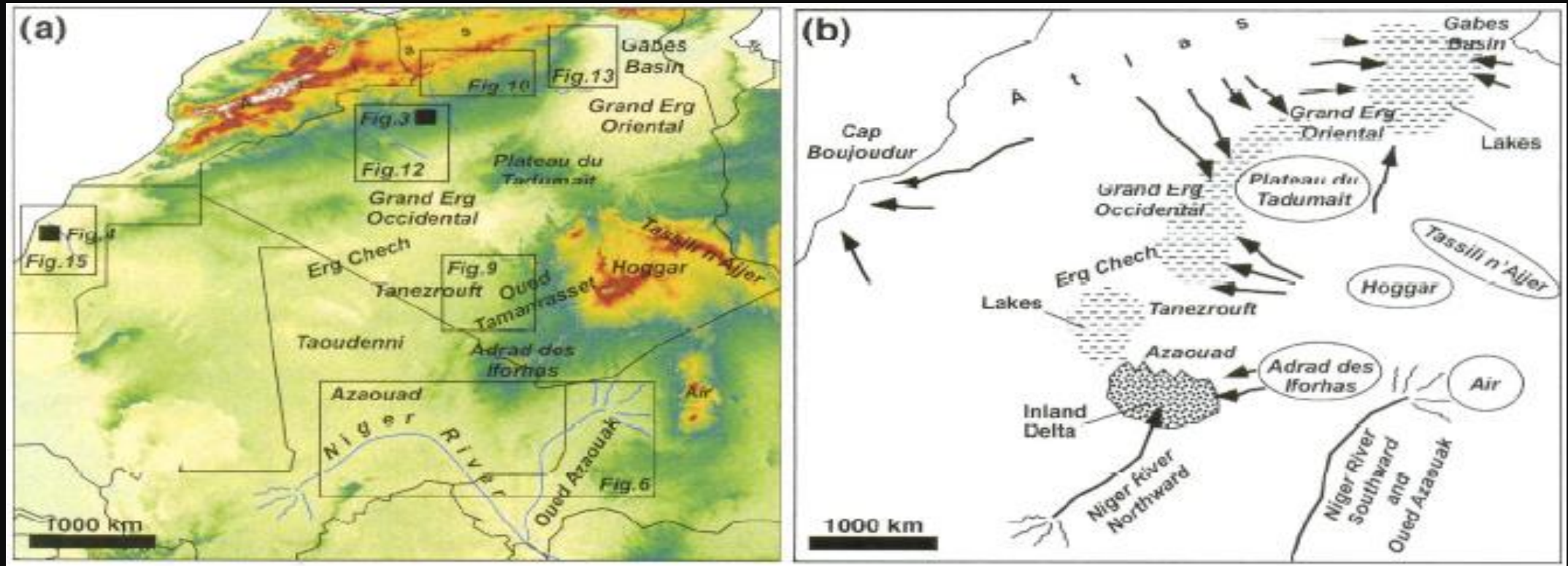


Most dusty deserts: Sahara and Middle East

Desert and locality	Aerosol index (max mean value)
Bode´le´, Depression of Central Sahara	>30
West Sahara, Mali and Mauritania	>24
Arabia, Southern Oman Saudi border	>21
Eastern Sahara, Libya	>15
Southwest Asia, Makran coast	>12
Taklamakan, Tarim basin	>11
Etosha Pan, Namibia	>11
Lake Eyre Basin	>11
Mkgadikgadi Basin, Botswana	> 8
Salar de Uyuni, Bolivia	>7
Great Basin of the USA	>5

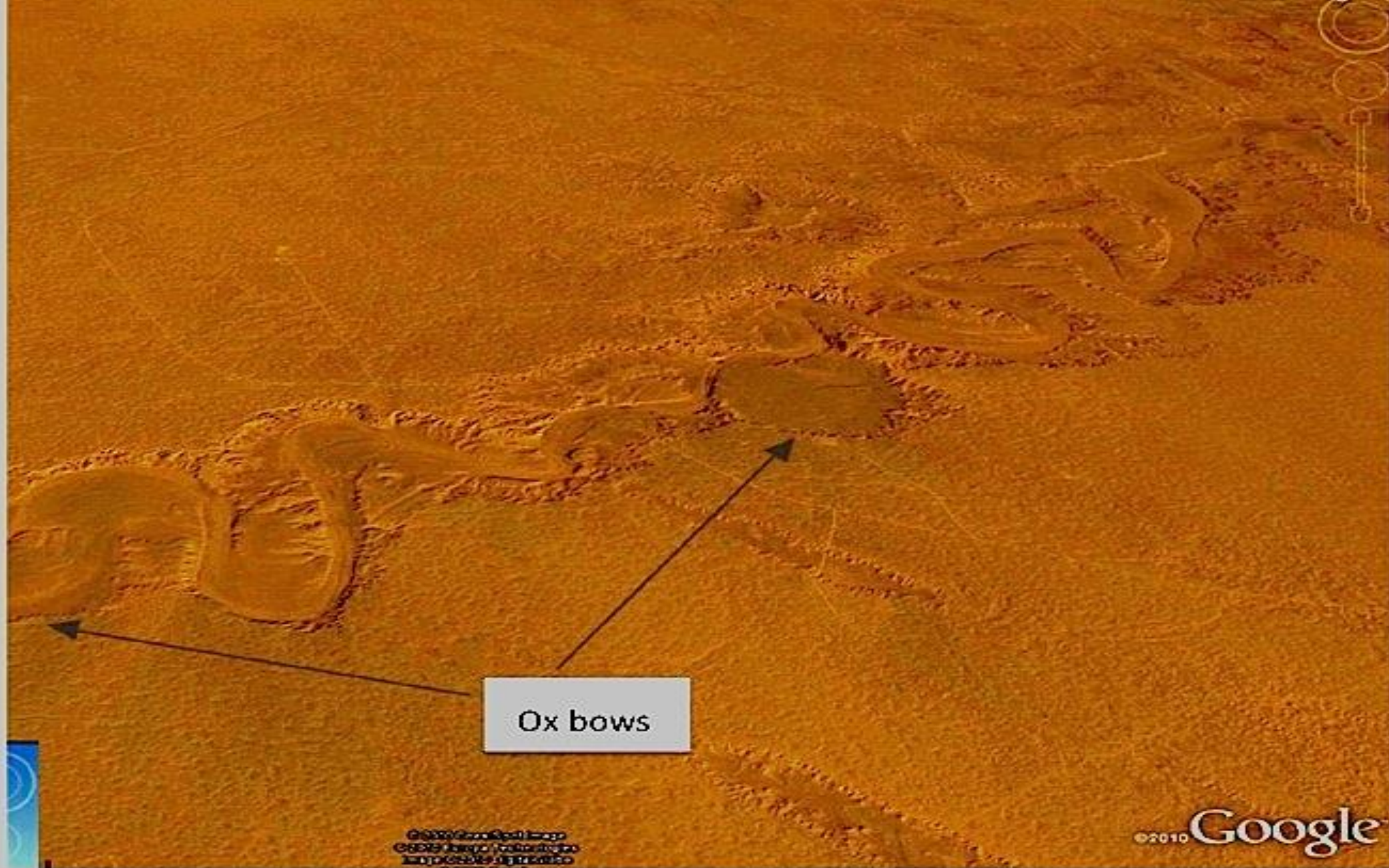
(After Goudie and Middleton, 2001)

Large scale river systems were present in Sahara during humid climatic periods



DEM with the present-day hydrological system

Humid-period hydrological system



Ox bows

©2010 Google

©2010 Google Earth Image
©2010 Google Earth Image
©2010 Google Earth Image

Ibn Battuta
centre



Discoveries



Test of DREAMS prepared for ExoMars





HELICONIA
AERO SOLUTIONS.

ThalesAlenia
space

esa

CN-HSD

ThalesAlenia
space

esa

esa













Dust storms



Mechanical failure





All of that needs a strong international cooperation in managing test sites, preparing test ranges, organising tests and in involving operators.....

