Impact of the Dhofar Cloud Forest on Subsurface Hydrological Fluxes: Modeling on the Scale of a Near-root Zone Soil Continuum

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Dhofar landscape: bare rock or forest?

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Philosophical precursor

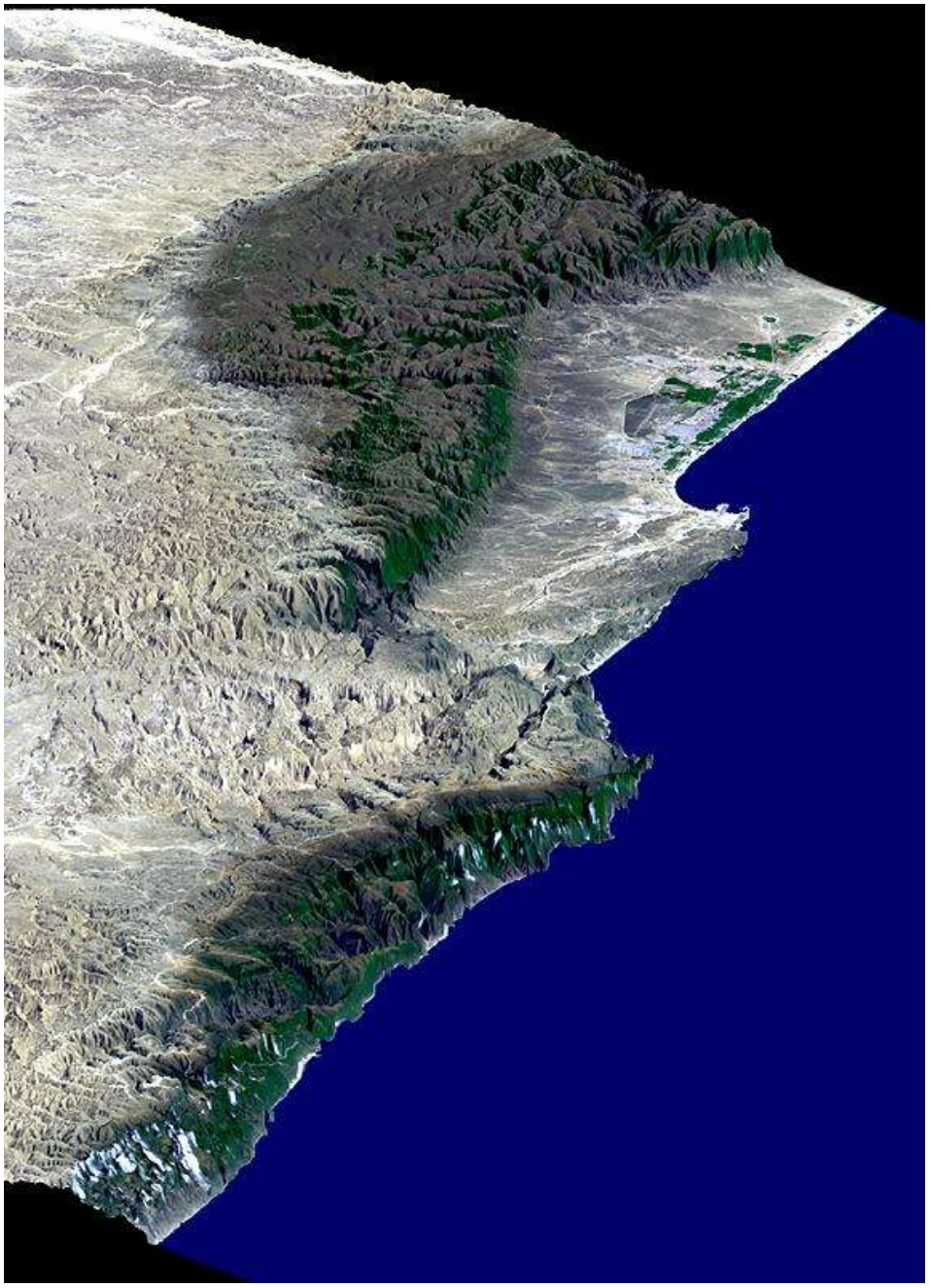
"Nature is the realisation of what is the simplest to think of as regards mathematics".

A.Einstein

"God assuredly always chooses the best"

G.H.Leibnitz

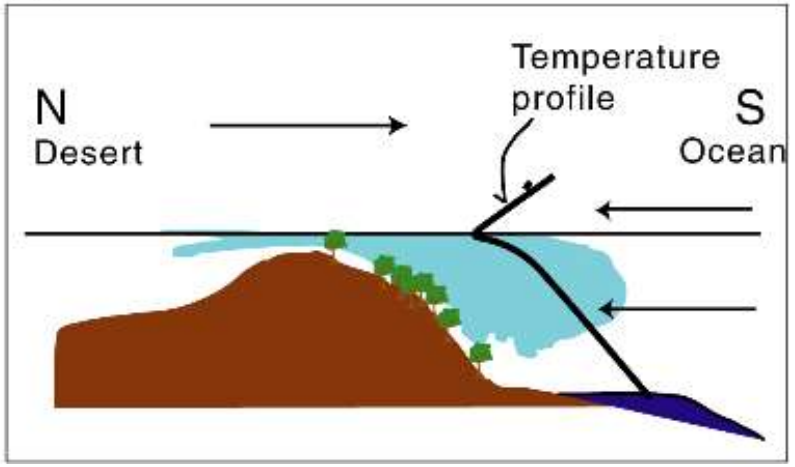
Key words: ***deciduous forest, hillslope vegetation, orographic rain, fog condensate, root water uptake, infiltration, water resources***



Landsat (NASA) image of the Salalah plane

(a)

(b)



Arabian peninsula scale (a), vertical cross-section, catchment scale

Typical trees in Dhofar forests

Green belt in Dhofar during monsoon

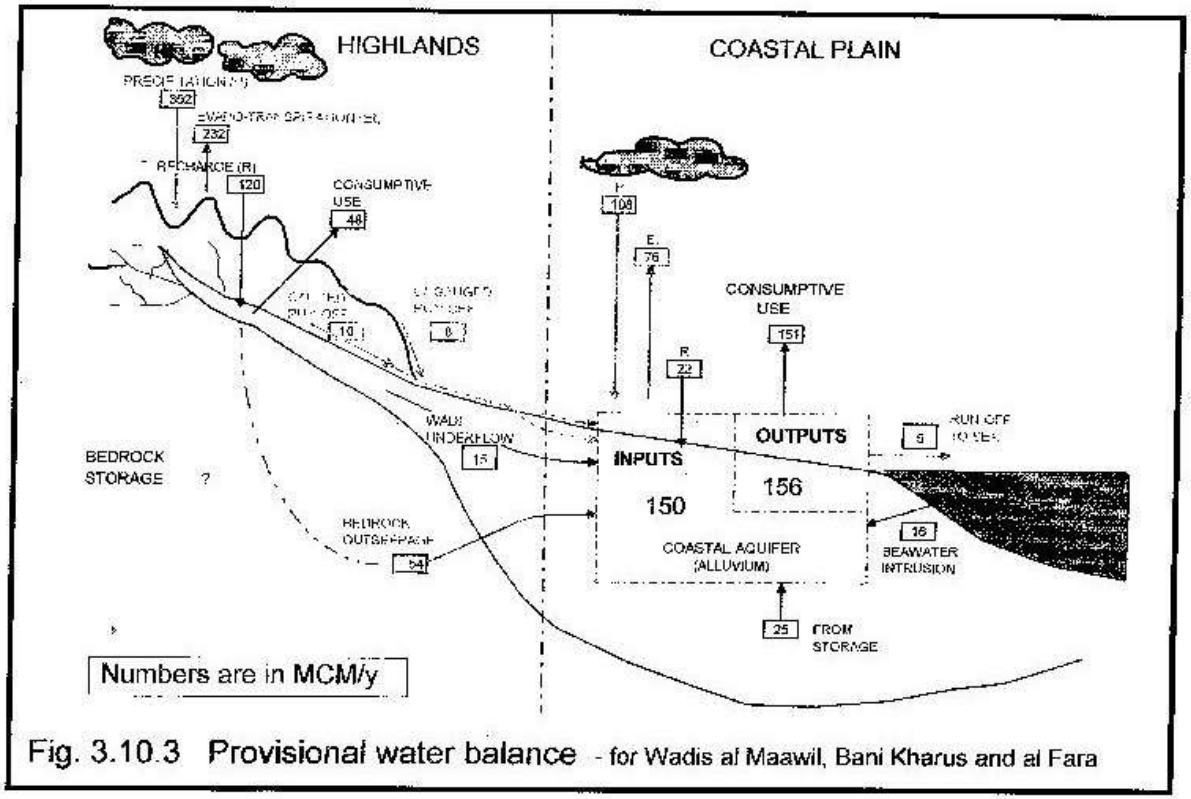
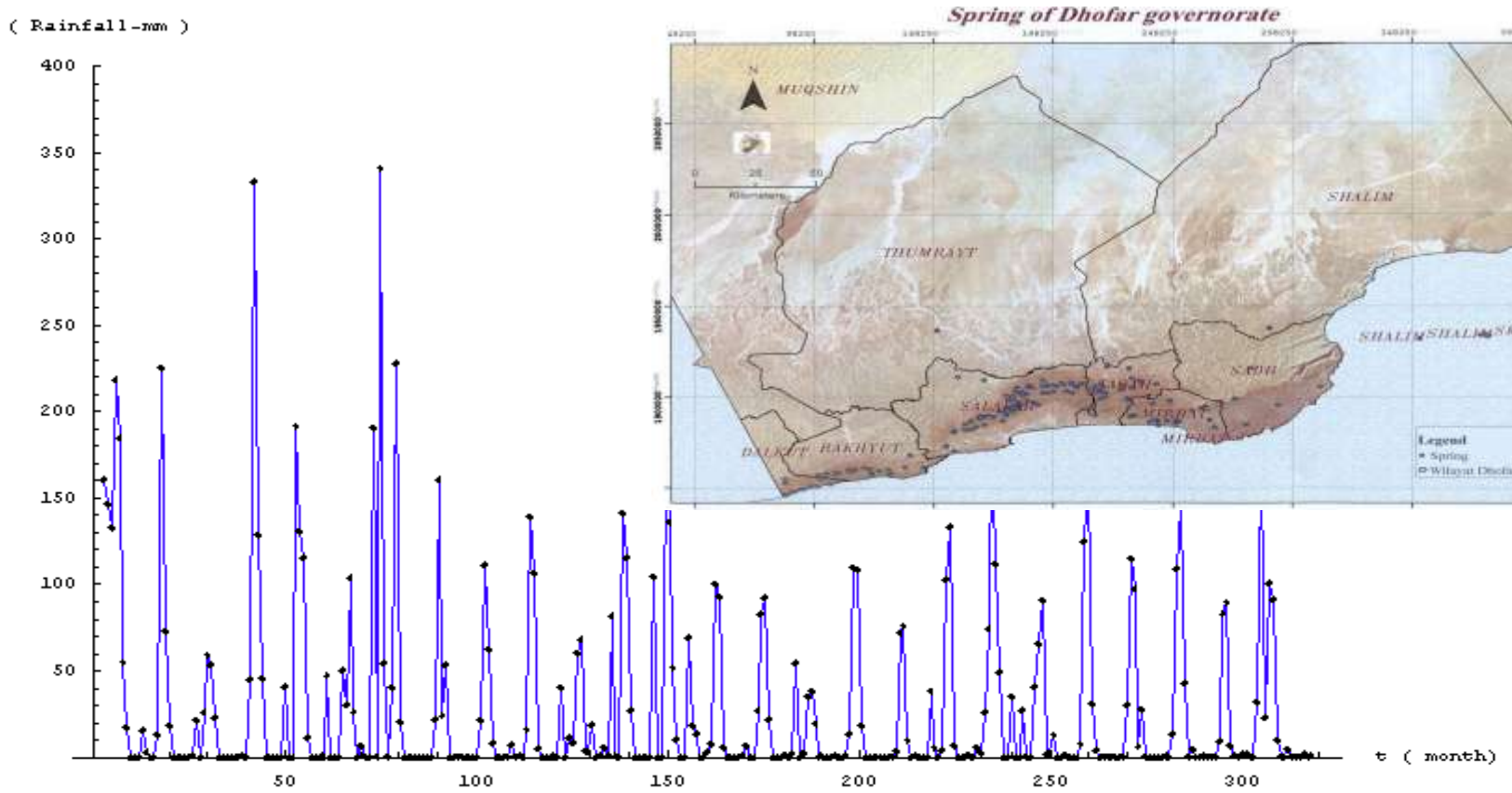


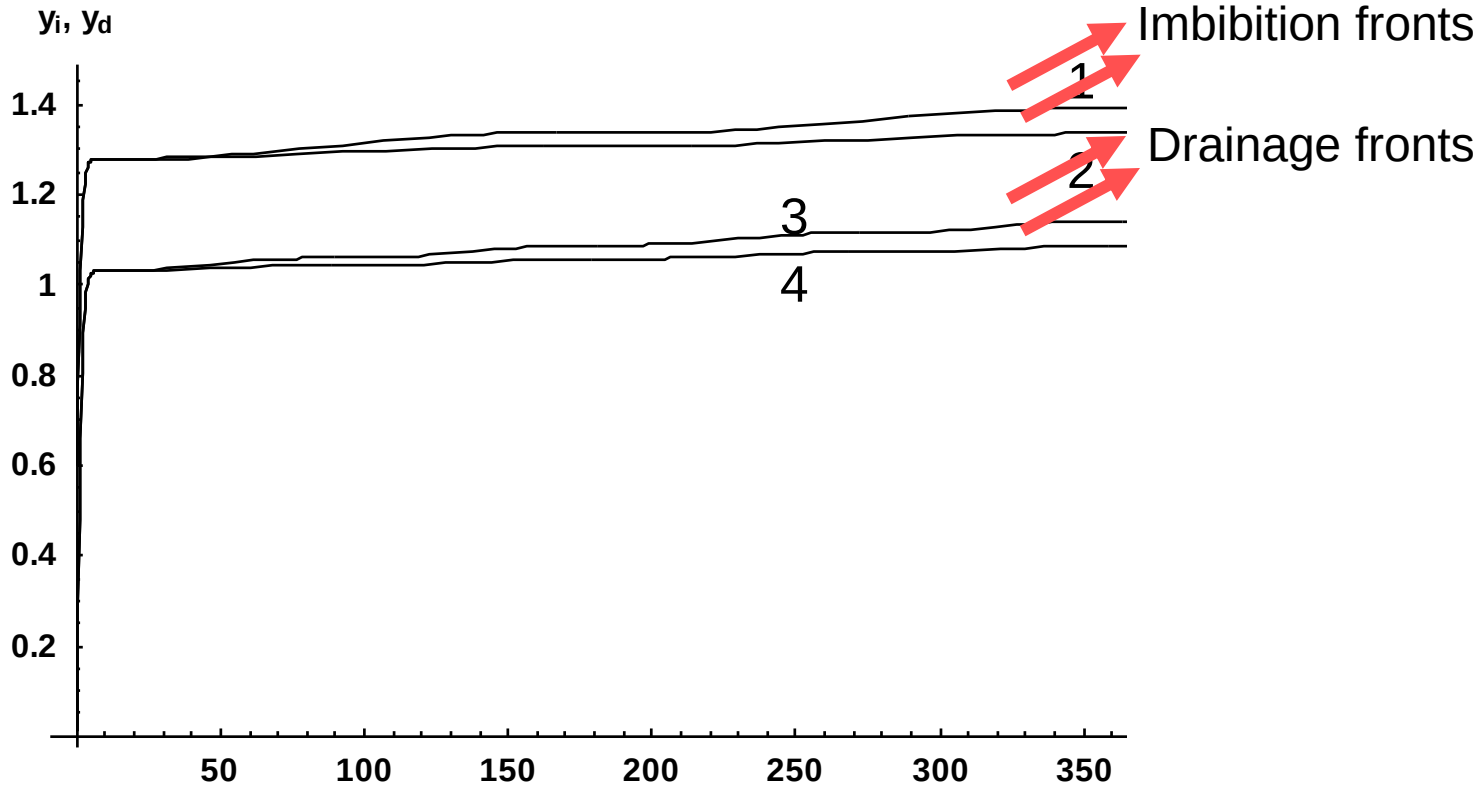
Fig. 3.10.3 Provisional water balance - for Wadis al Maawil, Bani Kharus and al Fara

Typical catchment-scale hydrological cross-section (Ministry of Regional Municipalities, Environment and Water Resources, Oman)



Rainfall (Salalah meteorological station)

Oman: total precipitation 19250 MCM/year, water deficit 378 MCM/year
Typical coastal plane climate:
Precipitation: 60-100 mm/year,
Evaporation: 3-8 mm/day
Daily mean global radiation in May: 800 mW/cm^2



Dynamics of fronts for two different exponents
in the exponential root uptake function