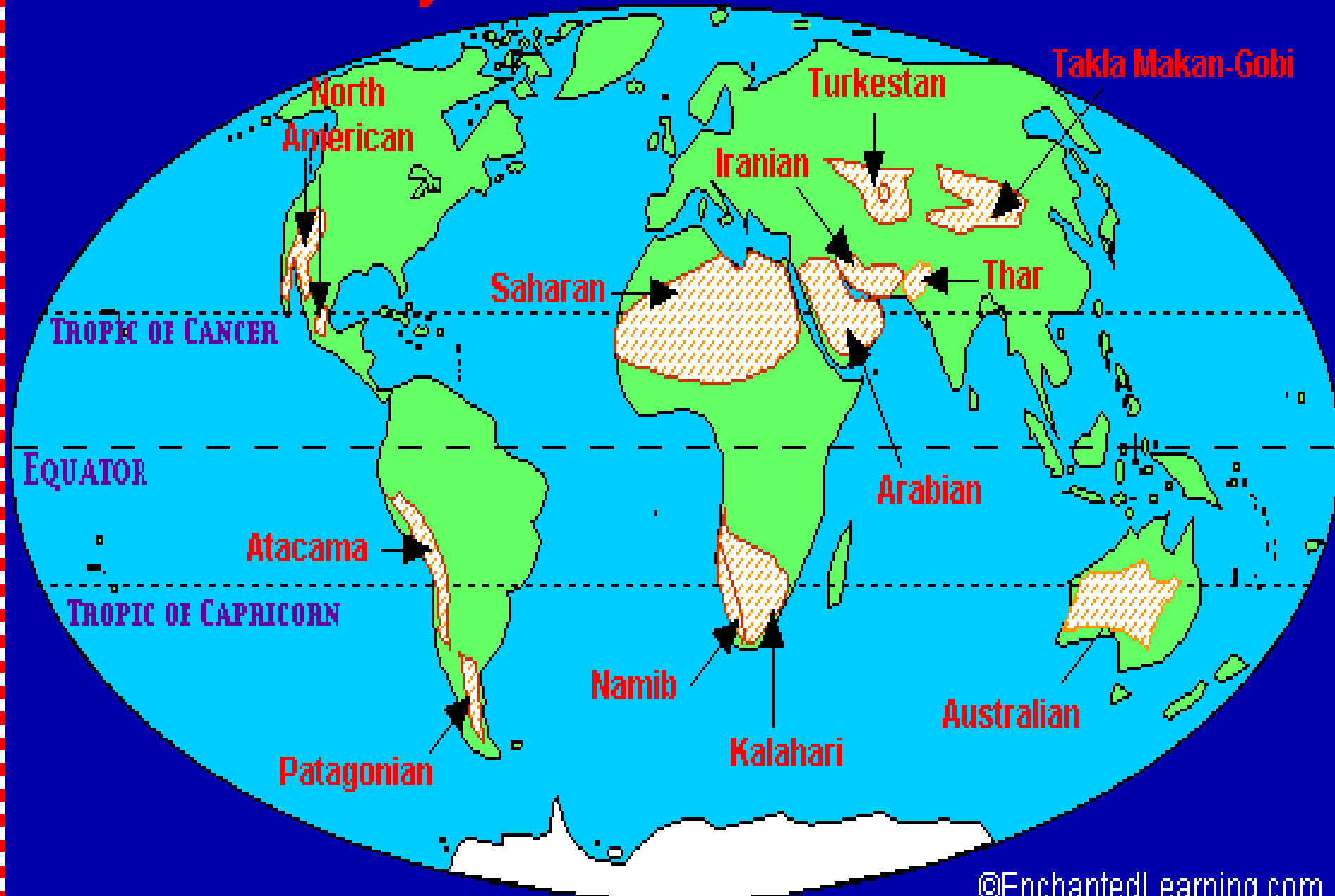
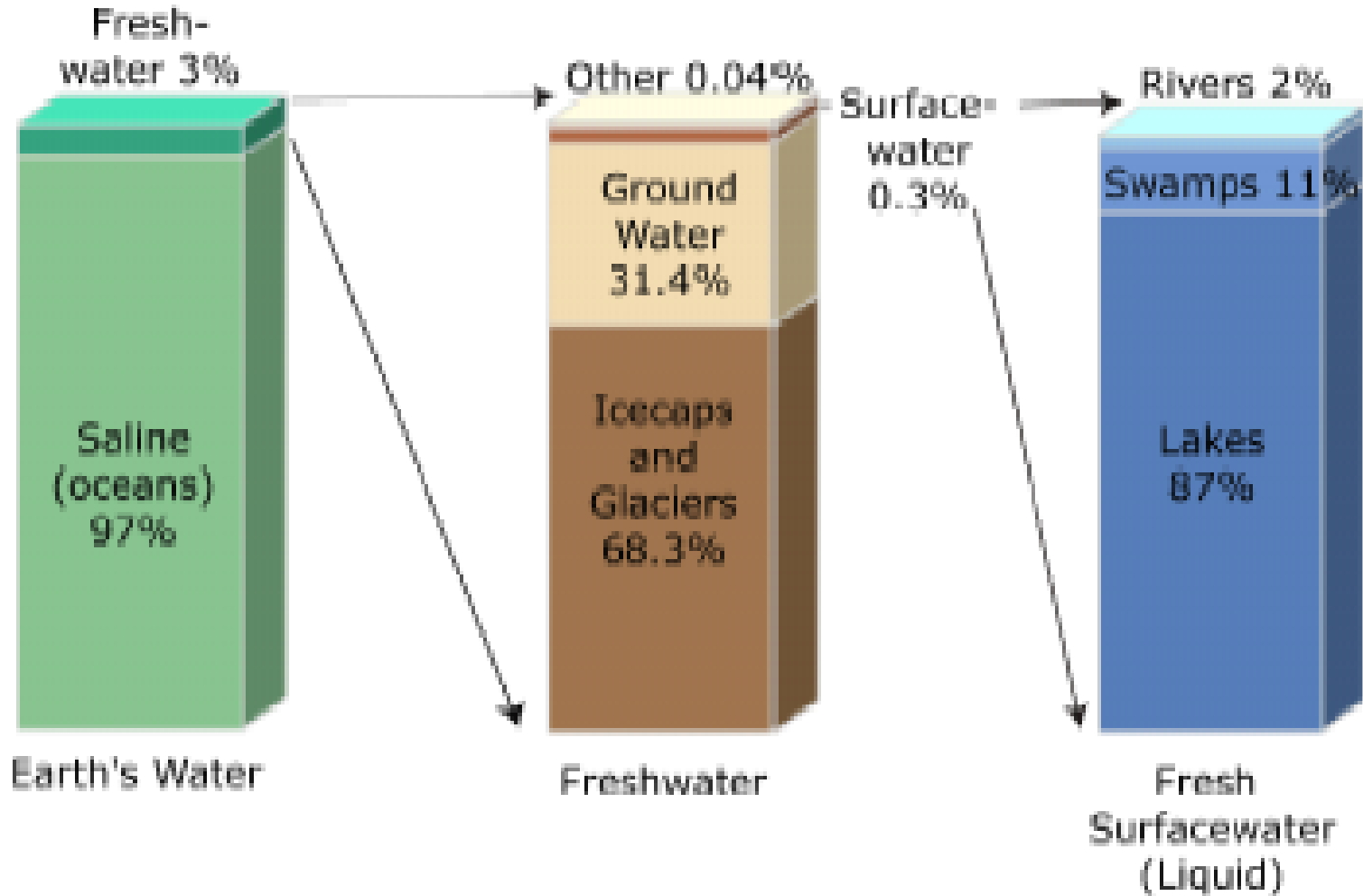


Major Deserts on Earth

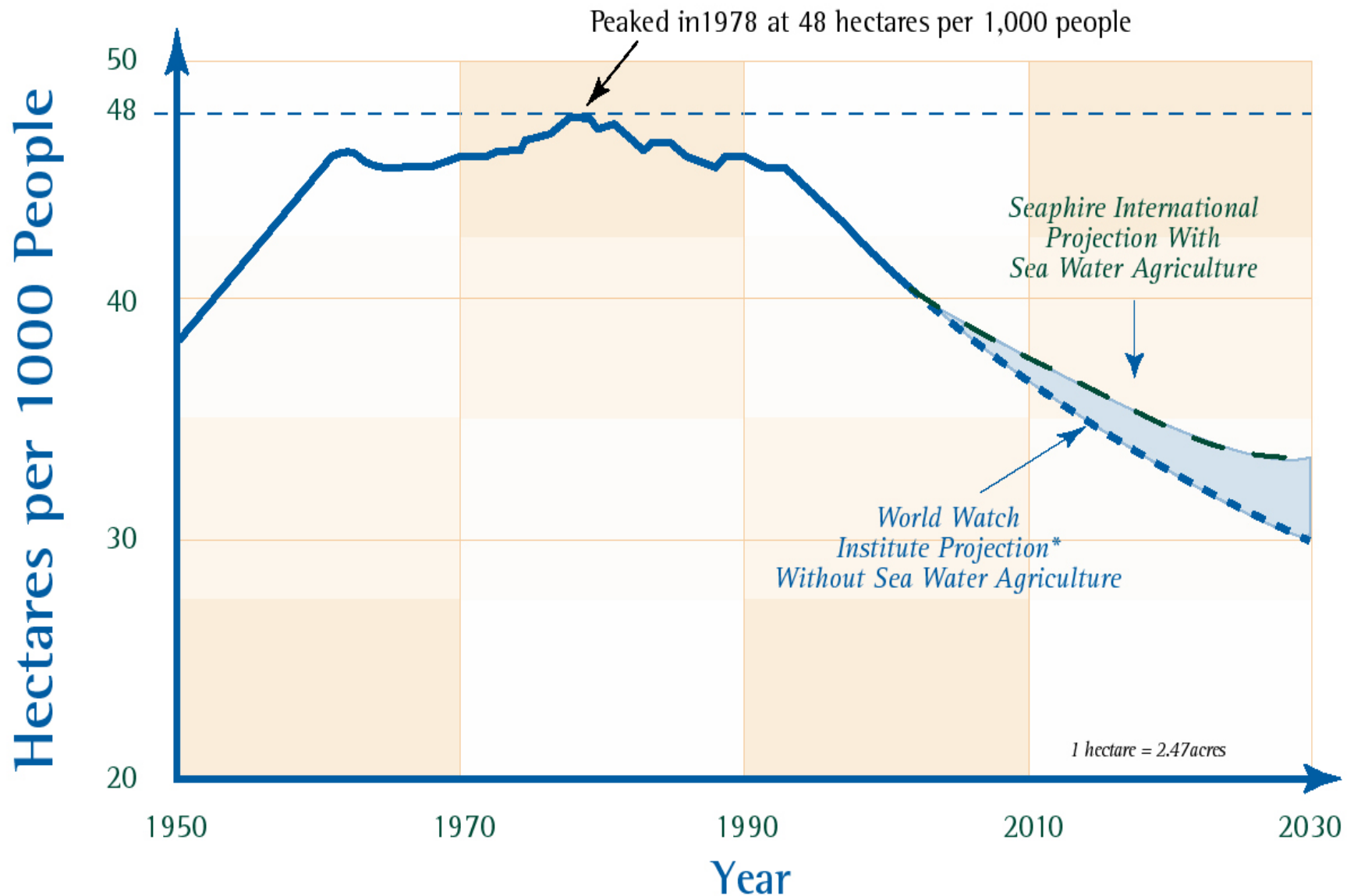


Where is Earth's water located and what form does it exist?

Distribution of Earth's Water



World Irrigated Area Per 1,000 People, 1950-95 with Projections to 2030



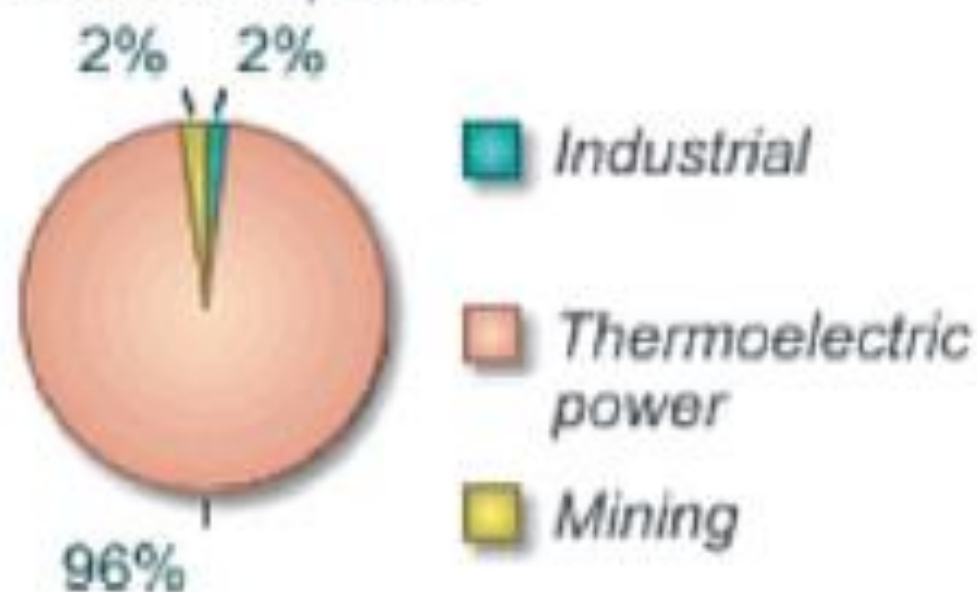
* World Watch Paper 136, "The Agricultural Link: How Environmental Deterioration Could Disrupt Economic Progress," Brown, Lester R., (Worldwatch Institute, Washington DC, August 1997, page 30-31, figure 9)

Saline water use

Total water withdrawals, 2000



Saline water withdrawals, 2000





Deserts of North America

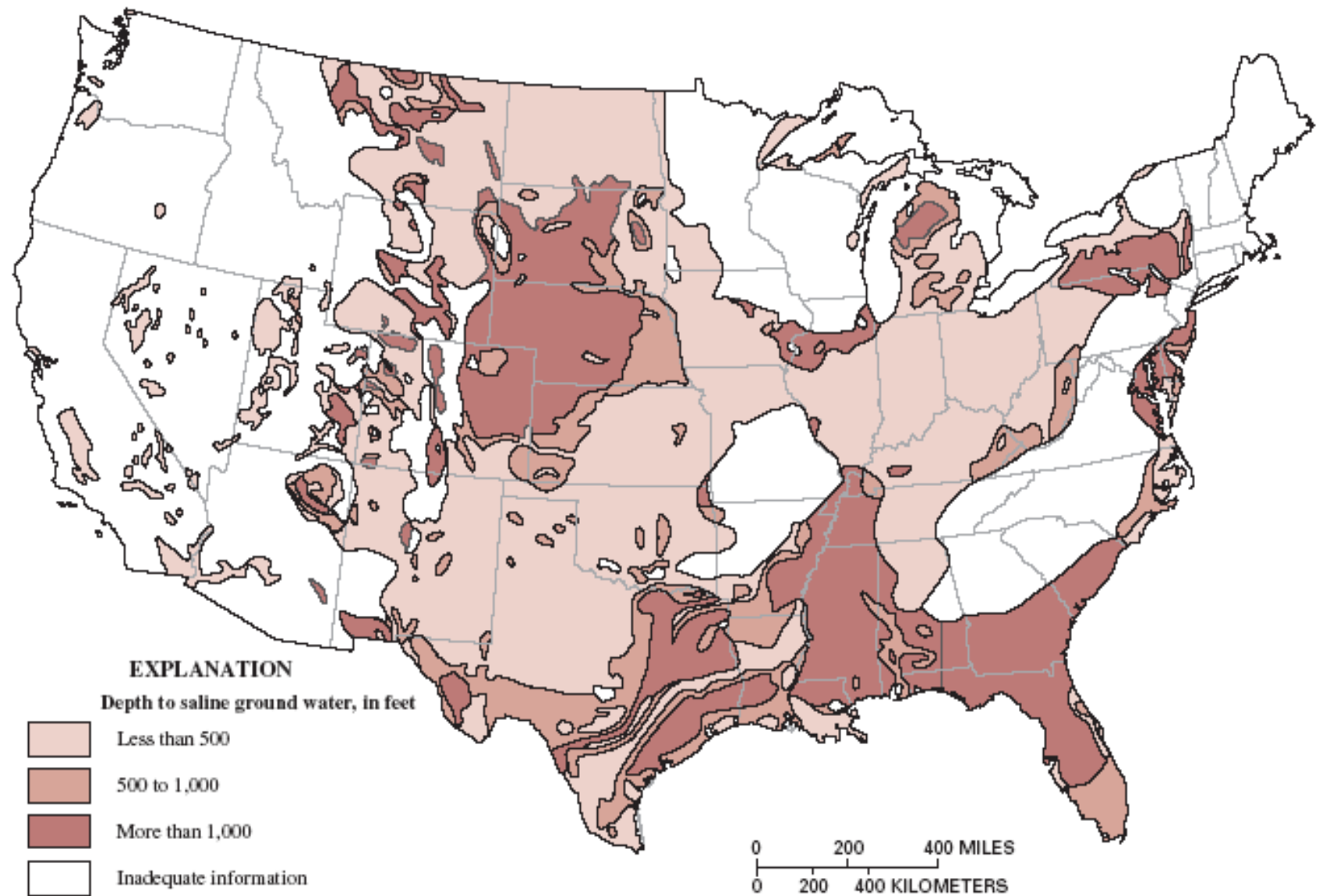


Figure 1. Depth to saline ground water in the United States (generalized from Feth and others, 1965)

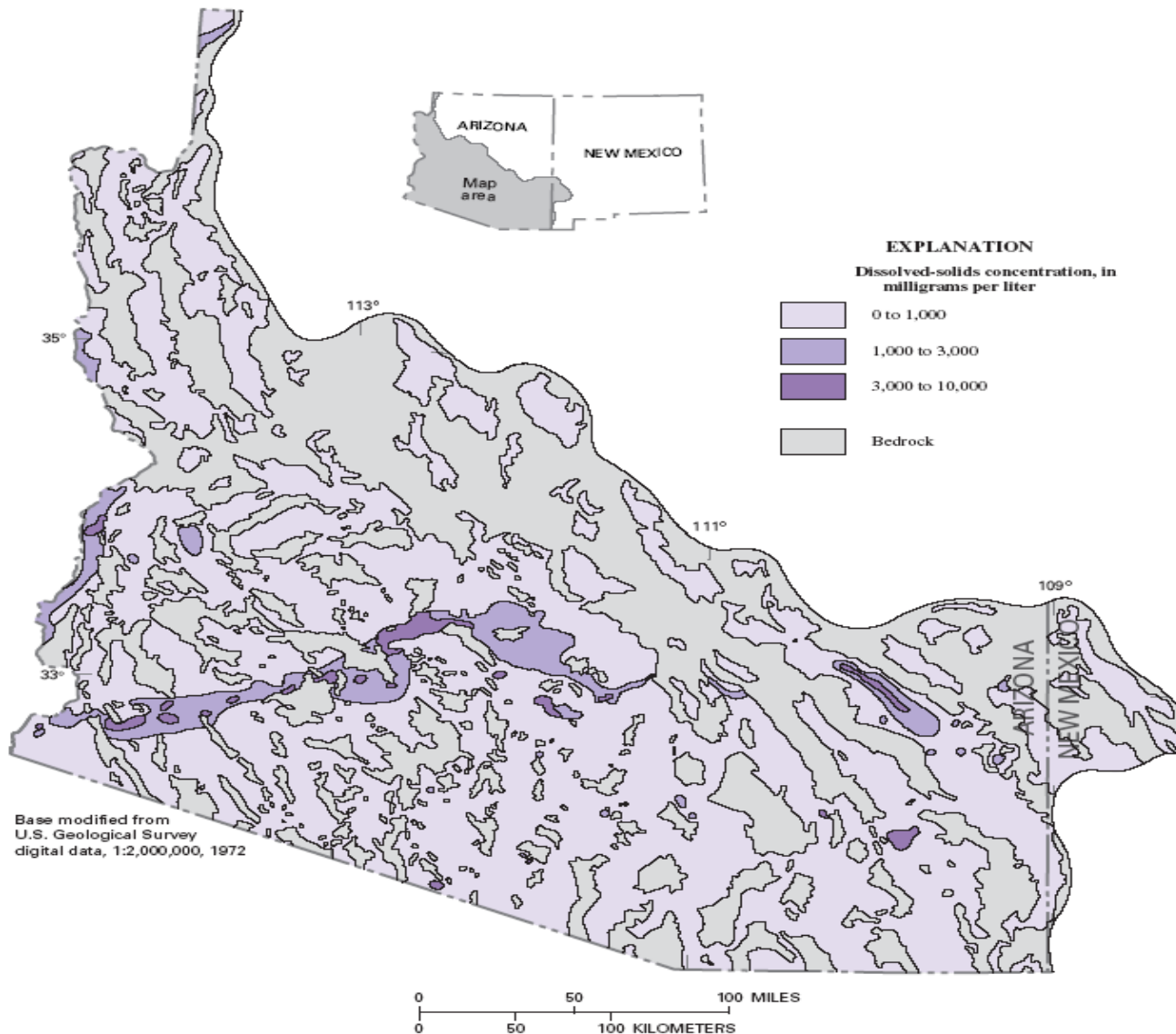
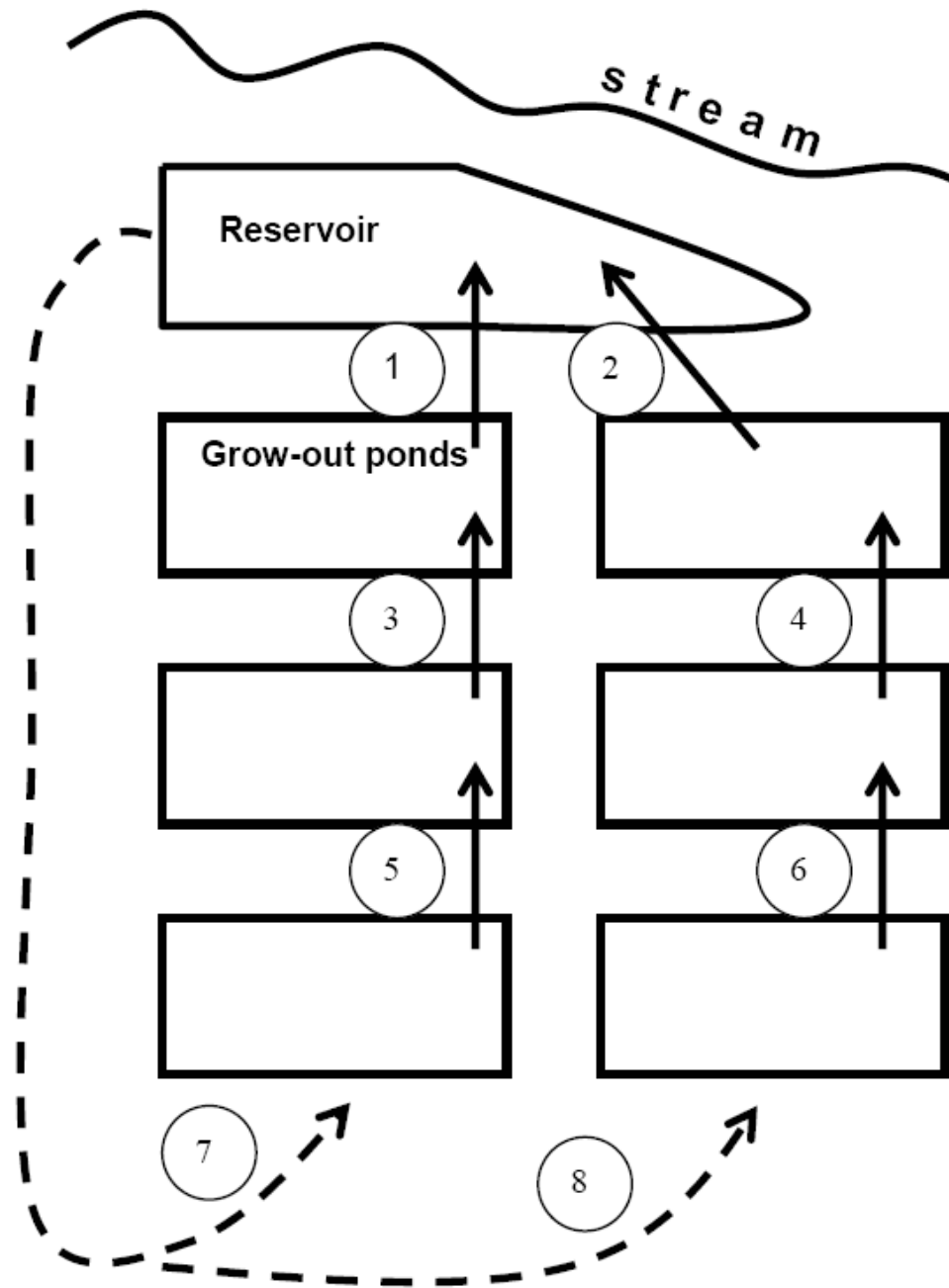


Figure 2. Dissolved-solids concentrations in basin-fill aquifers in Arizona and New Mexico are typically less than 1,000 mg/L, but can be much higher. Areas of higher concentrations include low parts of some basins where dissolved solids are concentrated by evapotranspiration from shallow ground water, basins with smaller fluxes of water naturally circulating through the ground-water system, near deposits of saline minerals, and in some areas of salt buildup from intensive irrigation. (modified from Kister, 1973; Robson and Banta, 1995)

Table 1. Typical analysis of saline ground water for use in culture of marine shrimp in inland ponds in Alabama.

Salinity	3.88 ppt	Calcium	86 ppm
Bicarbonate	105 ppm	Magnesium	21 ppm
Chloride	2,274 ppm	Potassium	8 ppm
Sulfate	2 ppm	Sodium	1,393 ppm





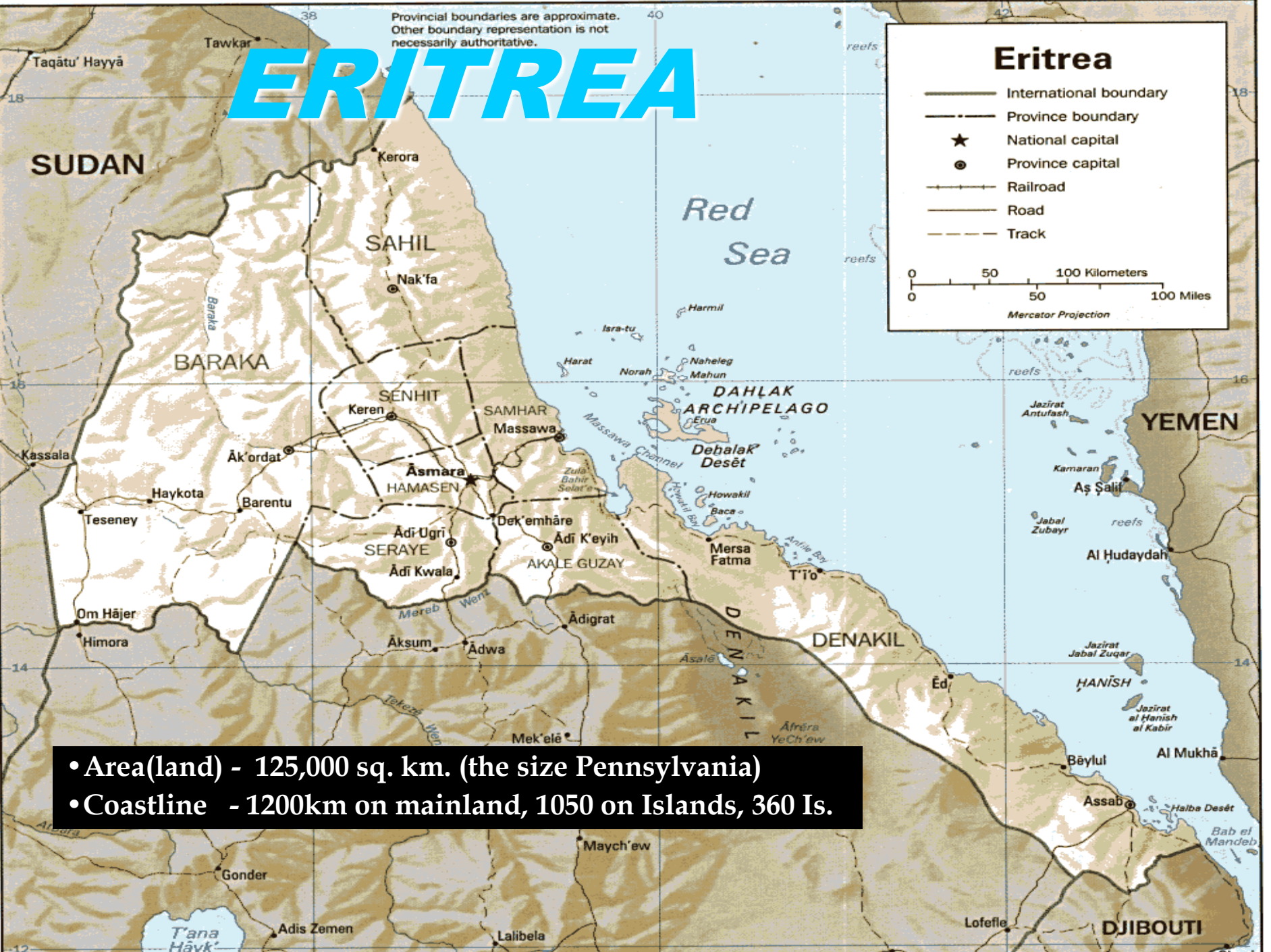
ERITREA

Provincial boundaries are approximate.
Other boundary representation is not necessarily authoritative.

Eritrea

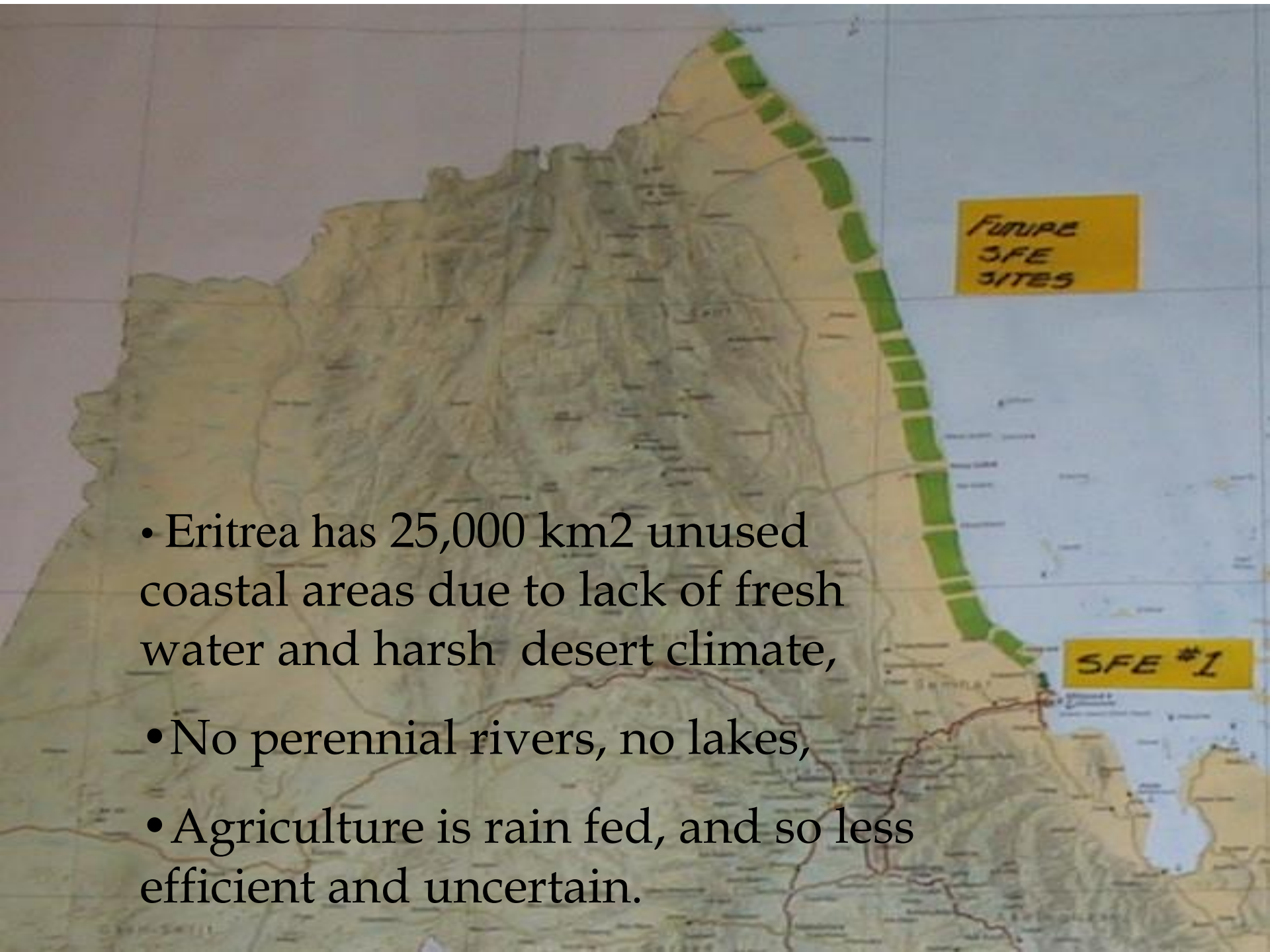
- International boundary
- - - Province boundary
- ★ National capital
- Province capital
- +— Railroad
- Road
- - - Track

0 50 100 Kilometers
0 50 100 Miles
Mercator Projection



- Area(land) - 125,000 sq. km. (the size Pennsylvania)
- Coastline - 1200km on mainland, 1050 on Islands, 360 Is.



- 
- A topographic map of Eritrea with a grid overlay. The land is colored in shades of tan and brown to indicate elevation. A green dashed line runs along the coast, marking several locations. Two yellow rectangular labels are placed on the map: one in the upper right quadrant labeled 'FUTURE SFEE SITES' and another in the lower right quadrant labeled 'SFEE #1'.
- Eritrea has 25,000 km² unused coastal areas due to lack of fresh water and harsh desert climate,
 - No perennial rivers, no lakes,
 - Agriculture is rain fed, and so less efficient and uncertain.



**Vast arid coastal areas and in the islands
unsuitable for fresh water agriculture.**



Alternative to freshwater
agriculture in the coastal areas is
SEAWATER AGRICULTURE



Intensive Shrimp

Wetlands

Production Lakes

Salicornia Agriculture

Salt Tolerance of Various Crops

Vegetable Crops

Beans, Carrots

Potato, Cabbage

Forage Crops

Alfalfa

Ryes

Field Crops

Barley

Cotton

Wheat

Soybeans

Paddy Rice

Corn

Sorghum

Salicornia

0
5
10
15
20
25
30
35
40
45
50
55
Spring Water

Salinity (dS/m)

Typical Seawater



Salicornia



Mangroves



Atriplex



ECONOMIC USES OF SALICORNIA

production of edible oil, food

raw material for cosmetics

forage, firewood

fiberboard for construction

pulp for paper industry



Oil extracted from *Salicornia*



Products of *Salicornia* seeds





Products of *Salicornia* straw



