456 Soil Moisture Stations with Real Time Observations

Data Set	No. of Stations	Starting Year	Sampling Interval	Top Layer	Number of Layers
UKRAINE Winter, spring cereals	141	1958	10 days	0-10 cm	10
MONGOLIA Pasture and wheat	40	1973	10 days	0-10 cm	10
CHINA Agriculture, natural	102	1981	10 days	0-5 cm	11
ILLINOIS Grass	18 17	1981 2006	10 days 1 hour	0-10 cm 5 cm	11 6
OKLAHOMA Grass	53-103	1997	30 min.	5 cm	4
NEBRASKA Grass	53	1998	1 hour	10 cm	4

Global Soil Moisture Data Bank
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Data Collection and Distribution
Land Surface Modeling
Remote Sensing
Data Analysis

Alan Robock
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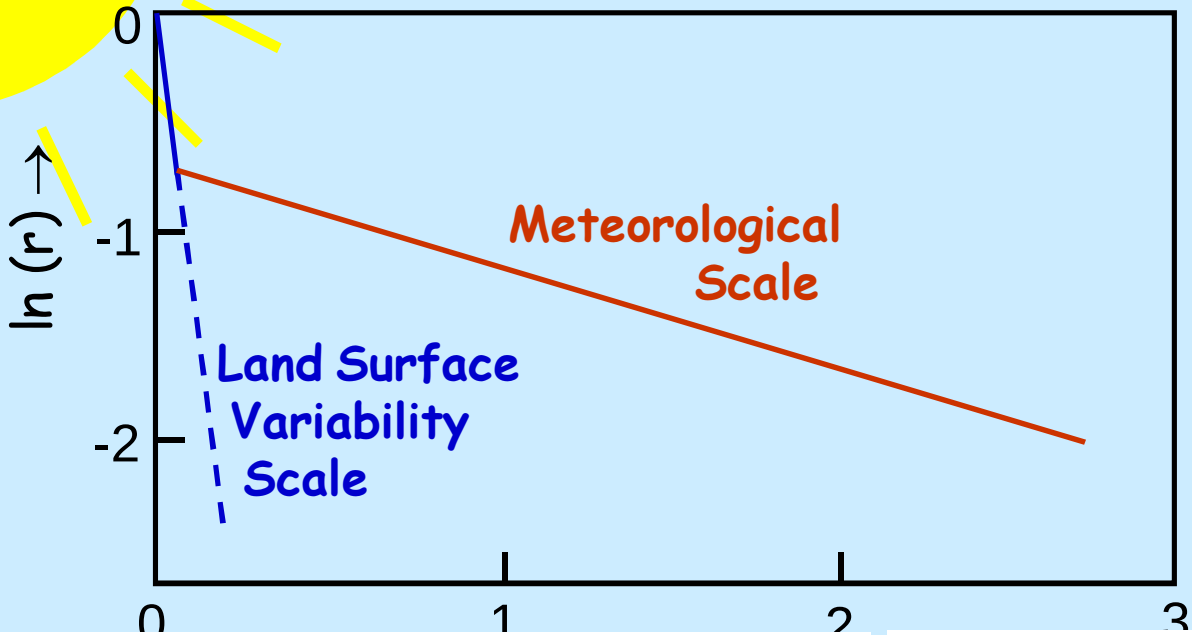
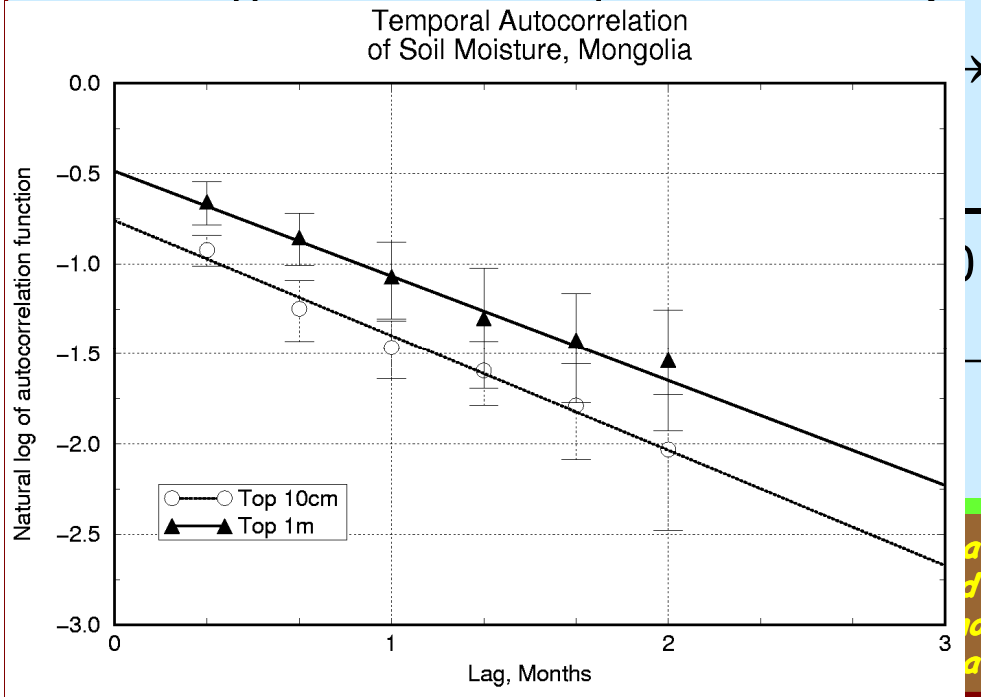
Scales of Soil Moisture Variation

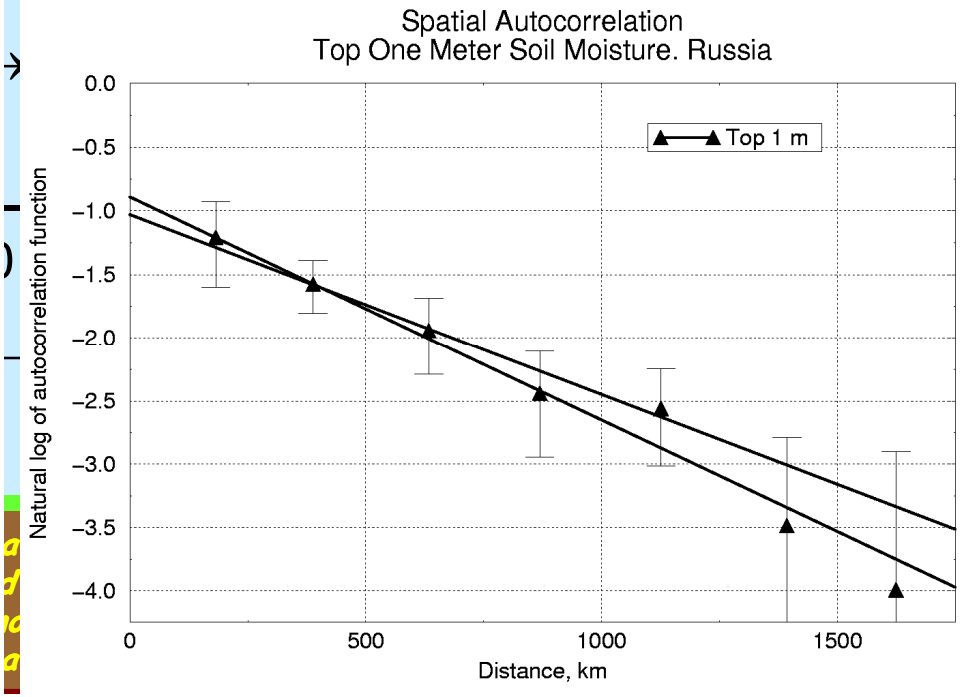


r = autocorrelation
t = time
d = distance
T = temporal scale
L = length (spatial) scale

$$r(t) = e^{-\frac{t}{T}}$$

$$r(d) = e^{-\frac{d}{L}}$$





Scales of Temporal and Spatial Variability of Soil Moisture

T = time scale, L = spatial (length) scale

Observed Spatial Scales, Entin *et al.* (2000)

	0-10 cm soil layer			0-100 cm soil layer		
	σ_o [cm]	η [%]	L_a [km]	σ_o [cm]	η [%]	L_a [km]
Illinois, US	0.85	30-35	380-490	4.0	30-35	510-670
China	0.57	45-50	500-550	3.8	55-65	475-575
Mongolia	0.51	60-80	200-400	4.7	60-80	200-400
Russia	-	-	-	3.1	55-65	500-750

σ_o is the total variance; η is the portion related to land surface

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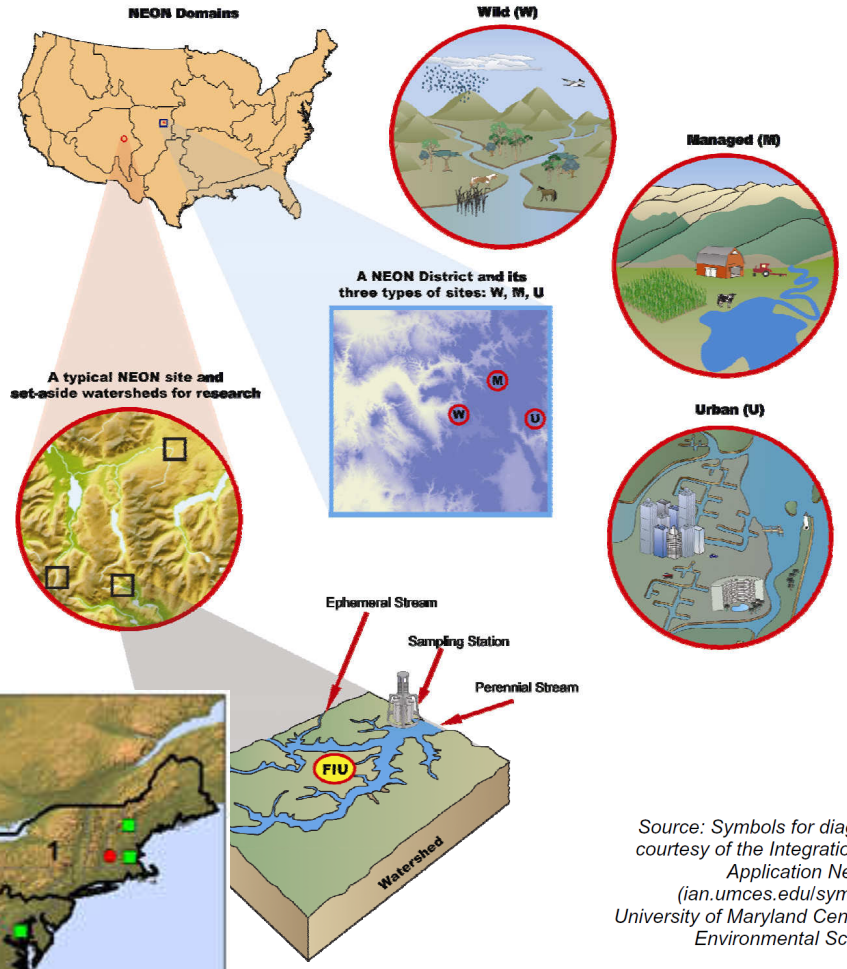
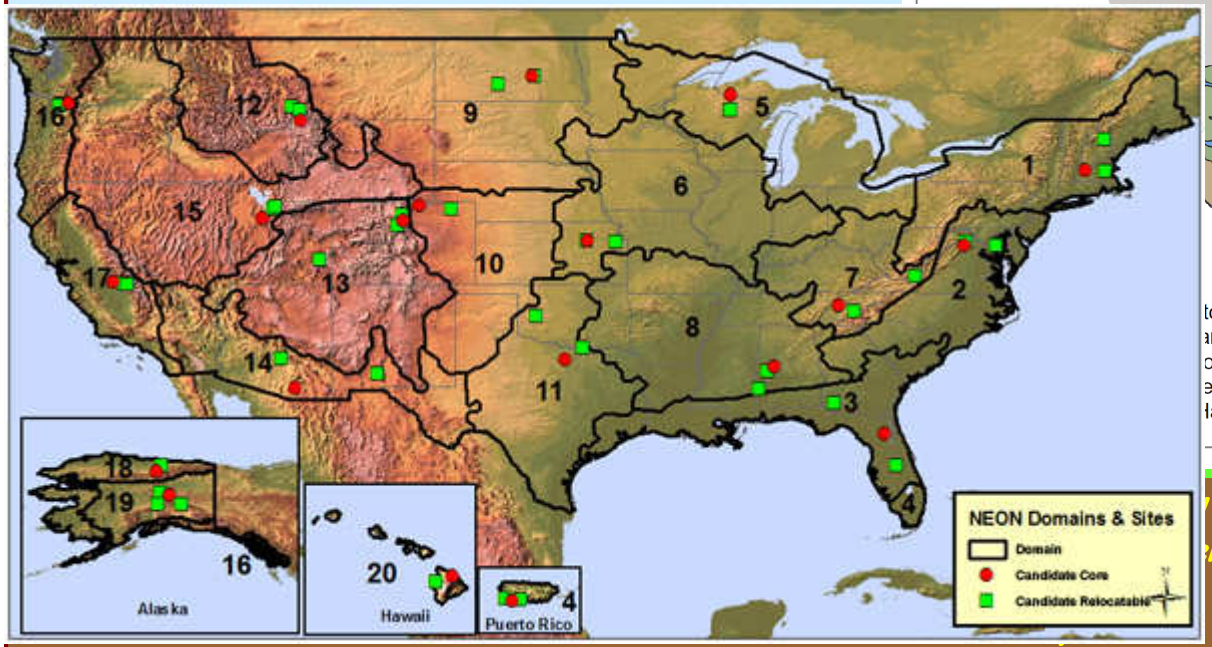
NATIONAL ECOLOGICAL OBSERVATORY NETWORK

Figure 1.3 NEON Districts



Source: Symbols for diagrams courtesy of the Integration and Application Network (ian.umces.edu/symbols), University of Maryland Center for Environmental Science.



tory climatic domains, a NEON District is established. Each District
and cover types (urban, managed lands, and wild lands), with each of
on small watersheds where transitions from terrestrial to aquatic
ensors, cyberinfrastructure, and protocols are common across the
Hawaii, Alaska, and Puerto Rico.

Distribution
ling

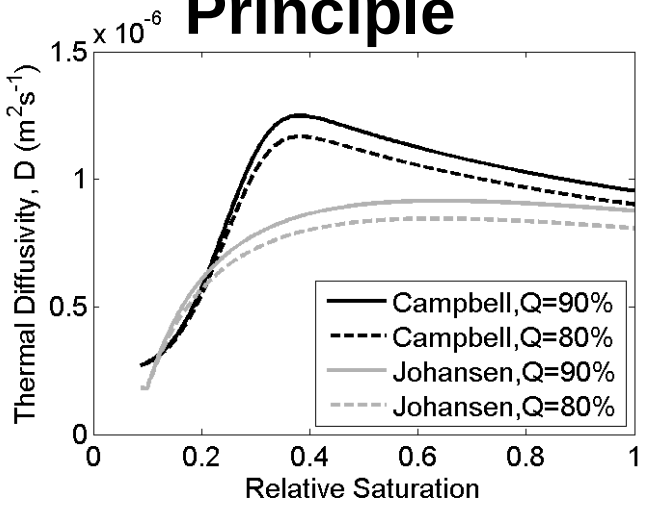
Alan Robock
Haibin Li
Konstantin Vinnikov

SoilDTS: Measuring soil moisture using distributed temperature sensing

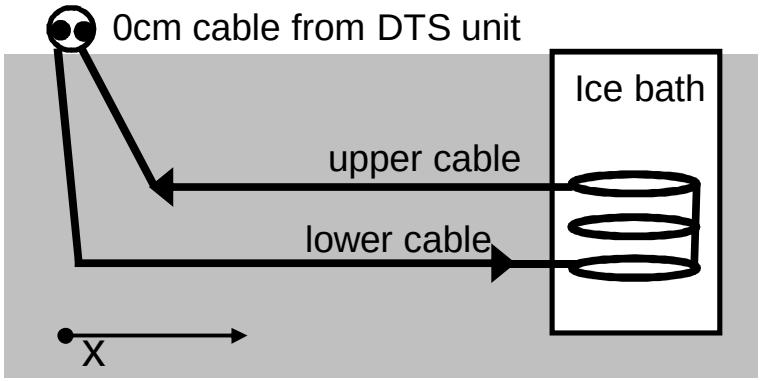
Susan Steele-Dunne et al.

TU Delft

Principle



Experiment design



Results