Quantifying Atmospheric Soluble Iron Input to the Ocean: A Workshop Design

Yuan Gao

Department of Earth and Environmental Sciences

Rutgers University

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Current Project:

Natural Iron Fertilization in the Ocean and Its Impacts on Ocean Nitrogen Fixation and Carbon Cycles

Investigators:

Yuan Gao (Rutgers)
Paul Falkowski (Rutgers)
Yoram Kaufman (NASA/GSFC)
Daniel Sigman (Princeton)
Michael Follows (MIT)

Sponsor:

NASA Ocean Biology and Biogeochemistry Program

Project Components:

(I) Quantifying the variability of dust source functions and *aeolian Fe bioavailability*;

(II) Quantifying nitrogen fixation and its relationship with Fe supply;

(III) Quantifying the feedbacks between aeolian iron supply, nitrogen fixation and carbon sequestration through biogeochemical modeling.

Aeolian Fe Bioavailability:

The key is Fe solubility and speciation.

Current State:

- **New data are available**
- **More regions were covered**
- **Large uncertainties exist, due to different measurement techniques**

Workshop on Atmospheric Iron Quantification

Proposed by

Yuan Gao (Rutgers University)

William Landing (Florida State University)

A two-day meeting, within the next 18 months,

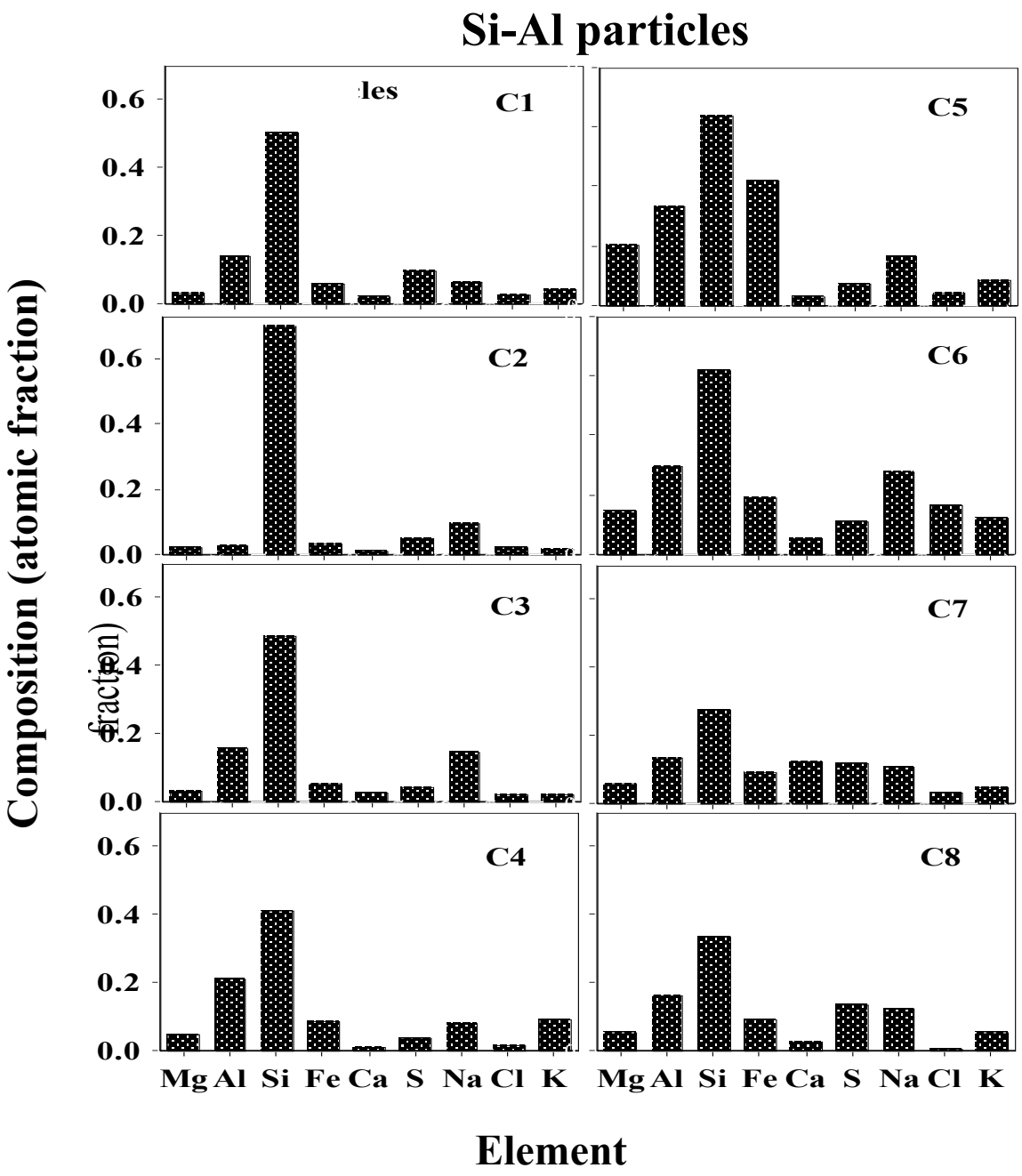
to be held in the US East Coast

Goal:

Atmospheric iron quantification comparison and method validation

Focuses:

1. **Dust sampling methods (land-based and on ships),**
2. **In situ Fe solubility measurement approaches,**
3. **Inter-laboratories analyses of "dust standards,"**
4. **New techniques for Fe determination,**
5. **Implication for Fe distributions in seawater,**
6. **Implications for biological uptake and modeling.**


Si-Al particles
Composition (atomic fraction)
Element
C1
C2
C3
C4
C5
C6
C7
C8
0.0
0.2
0.4
0.6
Mg Al Si Fe Ca S Na Cl K

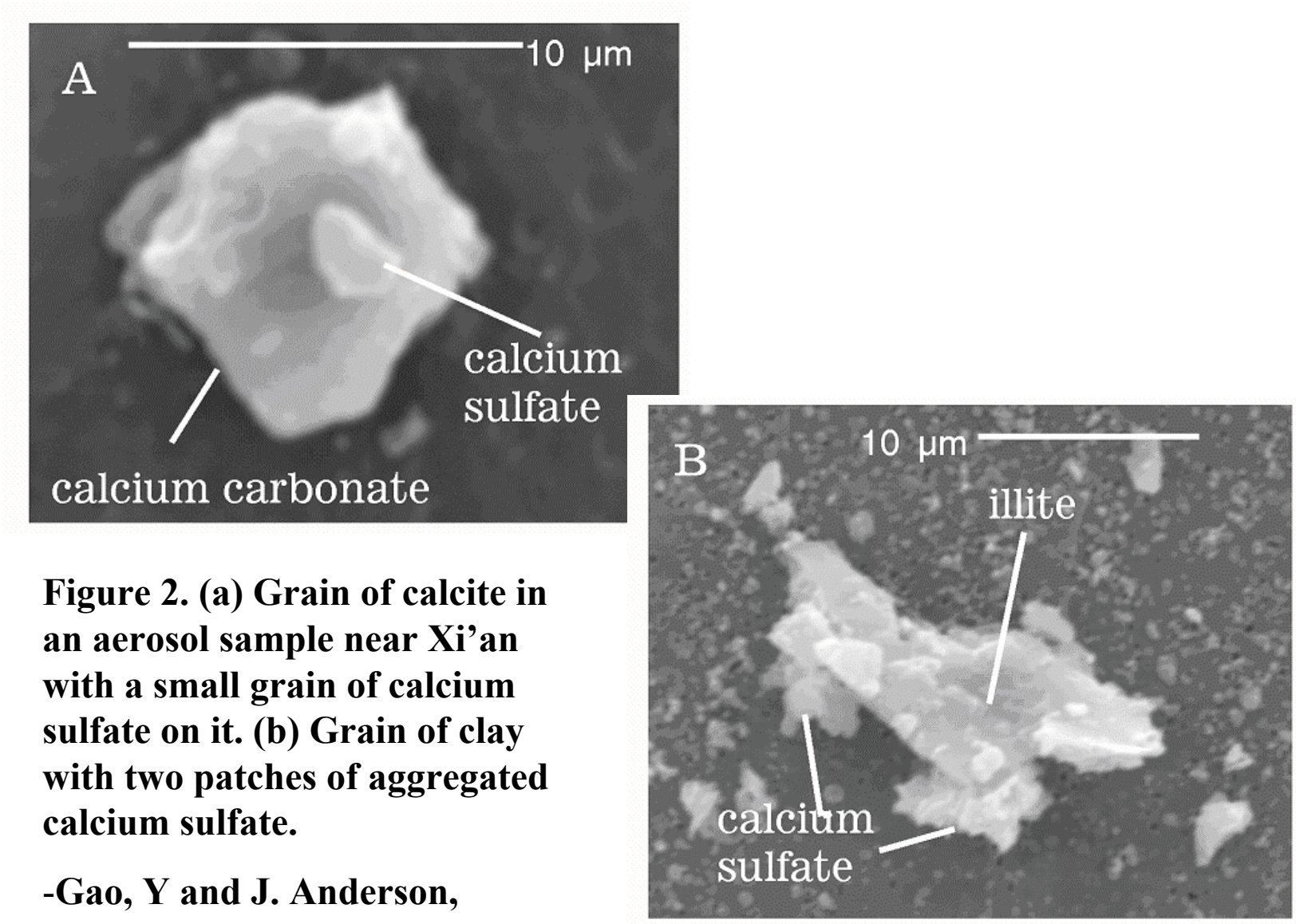


Figure 2. (a) Grain of calcite in an aerosol sample near Xi'an with a small grain of calcium sulfate on it. (b) Grain of clay with two patches of aggregated calcium sulfate.

-Gao, Y and J. Anderson, JGR, 2001.

Western China, Gansu Province, August 2004

Loess Plateau

Luochan Loess Profile →

(Dust accumulation record of ~2.5 million years)