National Soil Survey Center

Investigations and Laboratory

Functions and Goals: Soil Survey Investigations and the Soil Survey Laboratory

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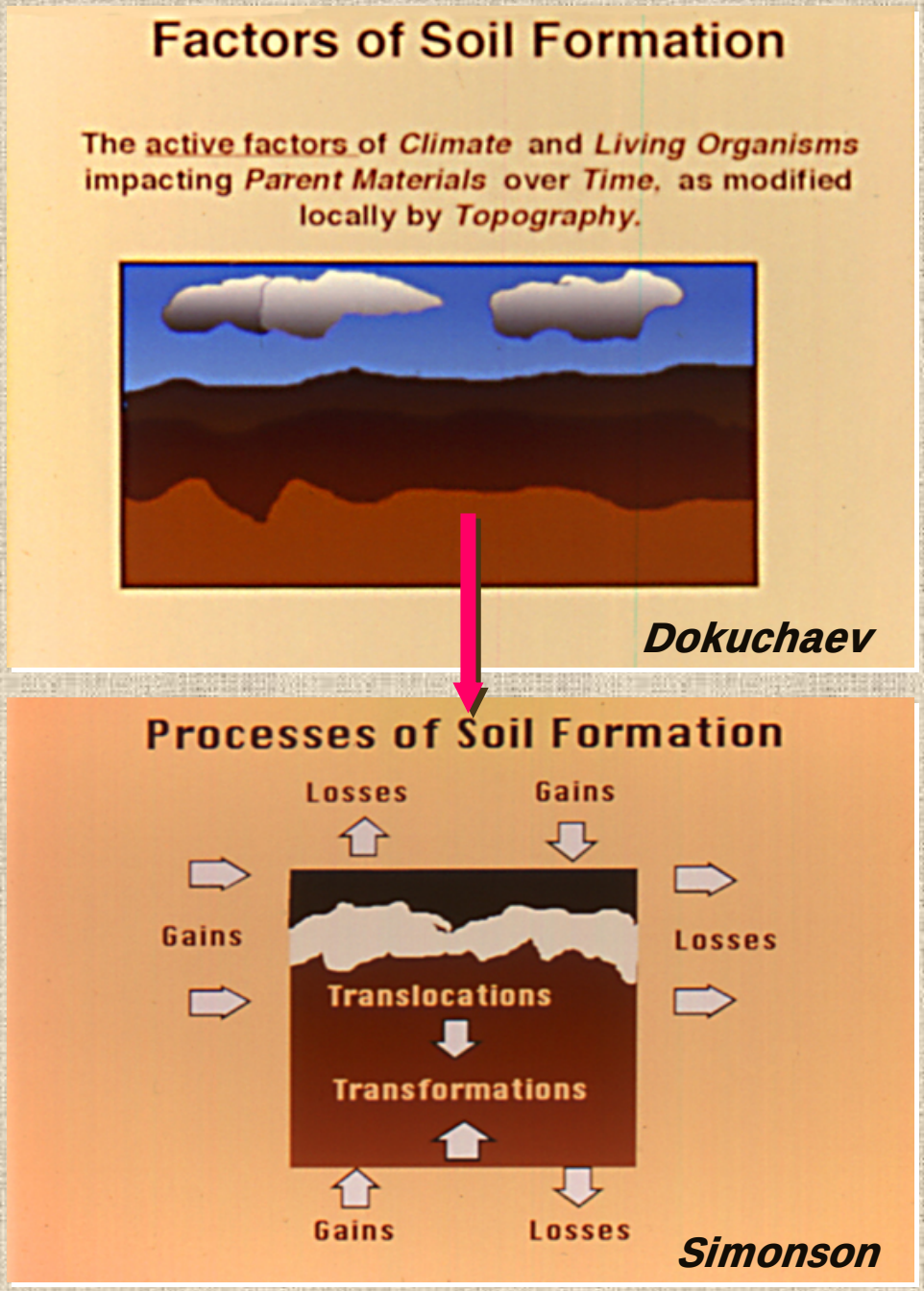
Updates from NSSC

- National Soils Handbook 617 requires Interpretations Criteria Review Committees at the Regional level.

- A76 – feasibility review to determine necessity of review for competitive outsourcing.

  - LBU's
    Administrative support staff.
    Entire NSSC
    Interpretations, Investigations and SSL.



Is there a more holistic resource model of terrestrial dynamics?

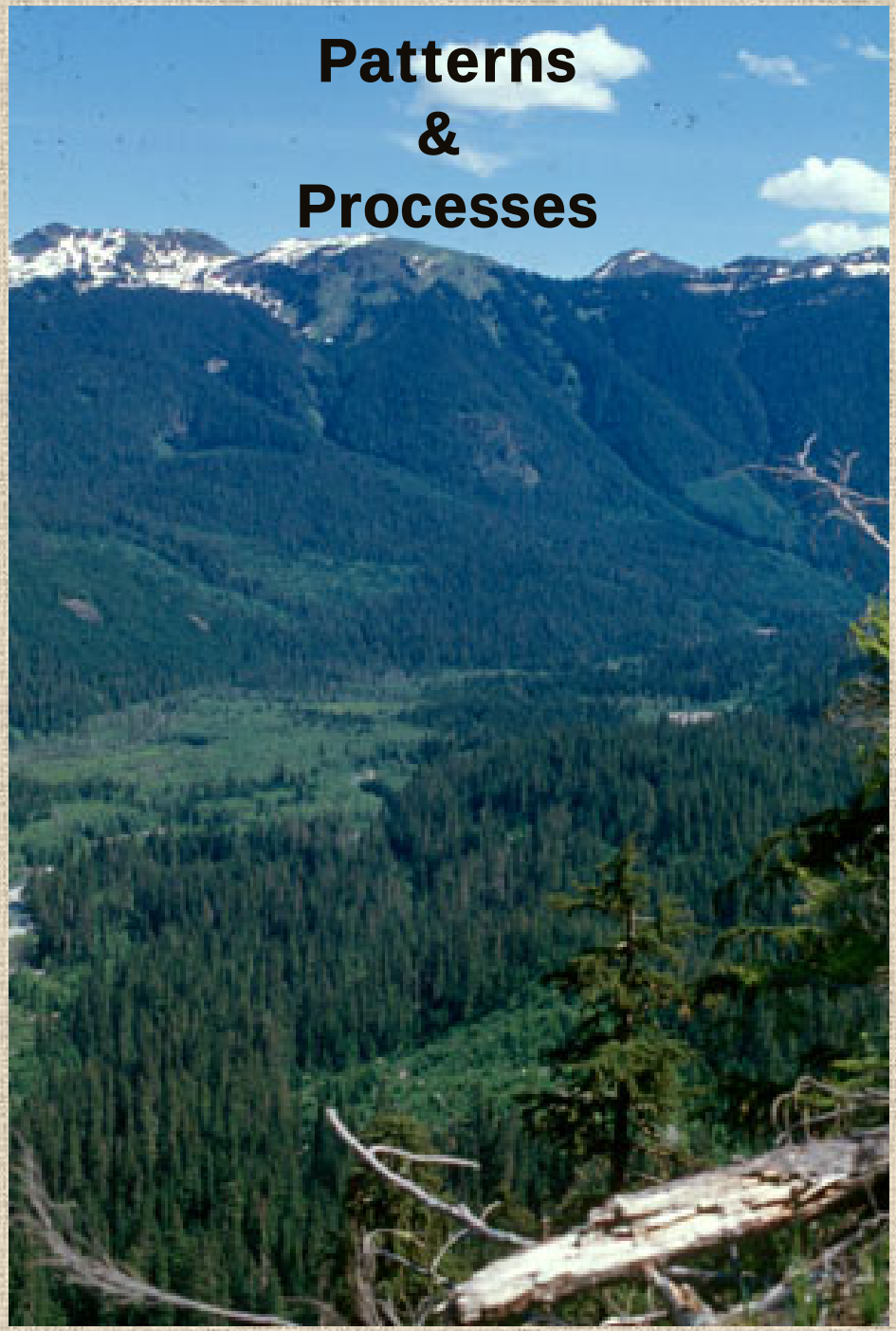
The driving agents in landscape-scales processes are the temporal and spatial distributions of water, nutrients and energy.

Data rich – information poor

"Illustrations used . . . to drive home some point to an audience before whom lucidity is . . . necessary have acquired the force of established facts,

whilst statements . . . have come to be believed in (if) for no other reason than that people have talked a great deal about them."

Sir John Russell, 1912



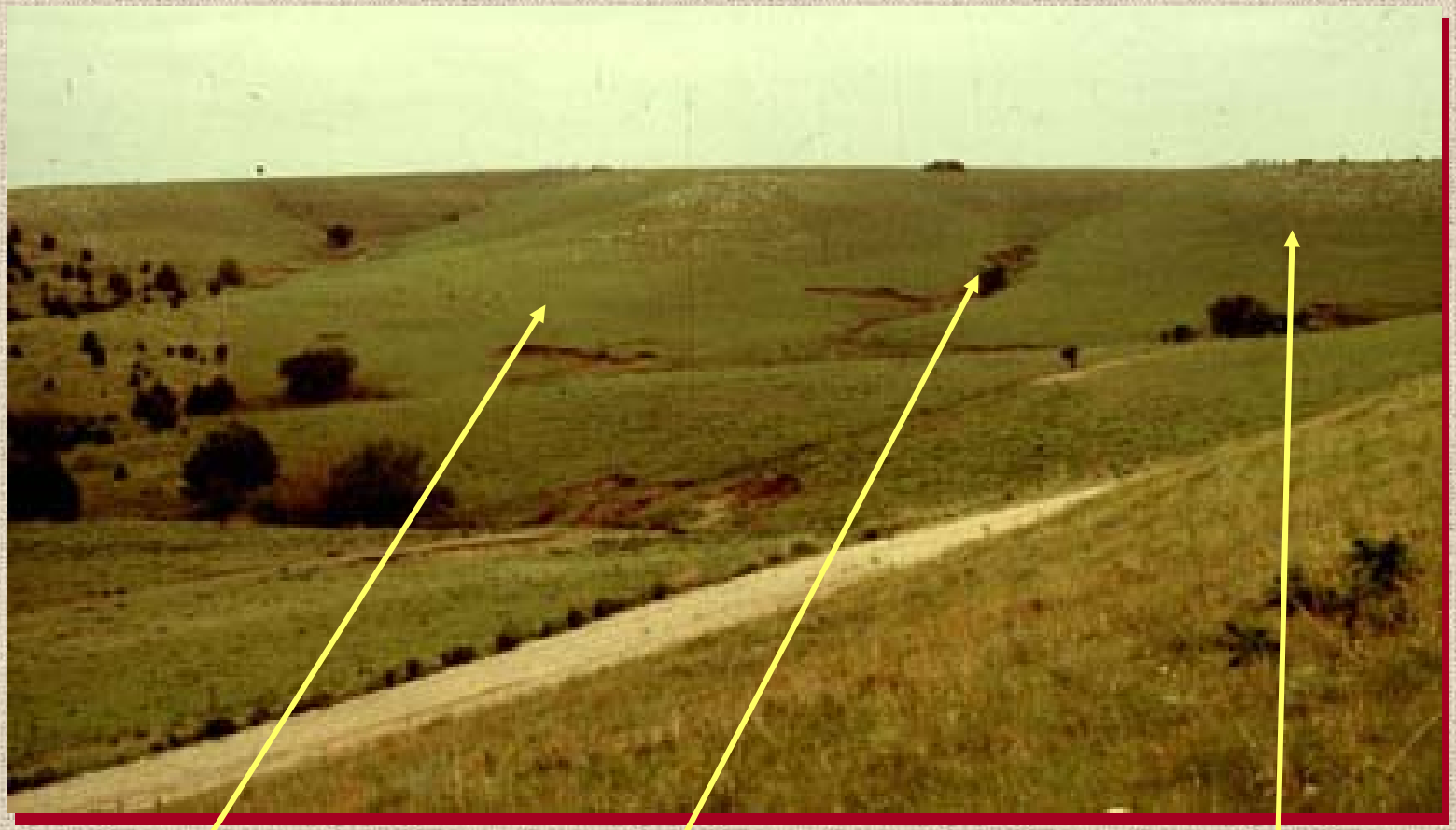
We really are

***data sporadic*.**

We need to be

data relevant

for existing and emerging interpretations needs.



Flow divergence

Flow convergence and emergence

Surface runoff and erosion

The challenge is to obtain the correct data from the appropriate places in the landscape to generate interpretations and models that meet current user needs.

NSSL Characterization Data Status

Benchmark Soils (1215)	NSSL Status	Data Completeness Index (DCI)
218 (18%)	No Data	
711 (58%)	At least one correlated pedon	1 – 9
592 (48%)	At least one correlated pedon “fully characterized”	7 – 9
286 (26%)	At least one pedon “sampled as, not correlated”	1 – 9

Division Strategic Plan

- **Enhance the cooperator network.**
- **Predict soil behavior and make interpretations on local, regional or national scales in crisis situations.**
- **Develop display systems that help users visualize soil and water behavior across and through landscapes over time.**

Division Strategic Plan

- **Identify and implement time-variant and use-dependent soil properties necessary to address environmental concerns such as resource sustainability and soil, water, and air quality.**

- **Develop and implement interpretive techniques that consider the relationships among individual soils on the landscape and integrate soil characteristics with other features such as geomorphology, climate, land cover, hydrology, roads, and buildings.**

Challenges

- **Integrate the Investigations and laboratory staffs into a cogent, functional team.**

- **Increase efficiency in the Soil Survey Laboratory.**

- ***Ensure that the most important and necessary samples are entered into the laboratory processing system.***

- **Move both staffs into the mode of operation necessary to meet the changing needs of Soil Survey as we shift into the maintenance, update and broader interpretations mode.**

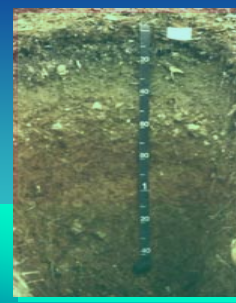
Current Investigations Staff Functions

- Field assistance for soil sampling
- Geomorphic studies
- Technical reports
- Watershed studies
- Heavy/trace metals
- Soil climate monitoring
- GPR and EMI training and assistance
- Field sampling methods and descriptive techniques
- Field manuals

Working for the Future

Link Research Priorities Committee network more closely to cooperators and Investigations staff.

- **Evolve interactions with the university cooperator network to assist faculty.**
- **Involve cooperators in regional research needs**
- **Create grant and tracking system (first proposals to be reviewed next month).**
- **Ensure relevance to interpretations – co-evolve with changing needs.**



Laboratory Functions

- **Laboratory support – full chemical, mineralogical and physical.**

- **Acknowledged world leader in developing analytical methods – development and "vetting."**

- **Quality assurance methods.**

- **Production and maintenance of technique manuals.**

- **Automated sample tracking (LIMS), data storage nightly, verified data tied to NASIS.**

Laboratory "Transformation"

Goal 1. Reduce turn-around time – goal is 4 months.

- **Cross-train technicians**
- **Prioritize the truly relevant samples**
  - **Receive only what is needed**
  - **Get internal prioritizations under control**
  - **Greatly increase internal efficiency**

Goal 2. Shift modes to meet changing needs.

- **Keep equipment up-to-date**
- **"Farm out" routine analyses to cooperator laboratories**
- **Retain highly qualified work force**

Research Priorities Committee

- National in scope
- Includes cooperating agencies at all levels.
- Develop projects which engage partners.
- Focus on needs for interpretations.
- Link with RFP process.
- Feed regional priorities into national committee.

New Activities for Cooperator Network

- Cooperative research at process scales.
- Active student identification and recruitment.
- Proposal reviews.
- Model development and refinement (SoLIM, watersheds).
- Some assistance with routine analyses.
- Transfer of thesis/dissertation data.

Current Major Long-Term Projects

- Watershed studies.
- Benchmark soils.
  - Broad geographic extent
  - Economically or environmentally important
- Use-dependent soil properties.
- Soil quality.
- *Gypsiferous soils.*
- Trace / heavy metals.

Database committee

***Evaluate the entire laboratory data base to*:**

- **Determine the quality of archived data.**
- **Determine the completeness of archived data.**
- **Ensure that all benchmark soils are represented.**
- **Design sampling strategy to complete data base.**
- **Coordinate integration of university/cooperator soil data bases in a systematic and consistent way.**

My Request for You

- Tell us what you need, and be persistent. We will change our culture to be more responsive.

- Ensure that we are getting the samples you really need, and ensure that the sampling plans are science-based – test a relevant hypothesis.

- Identify responsible cooperators and engage them. We can assist them with field and laboratory support.