

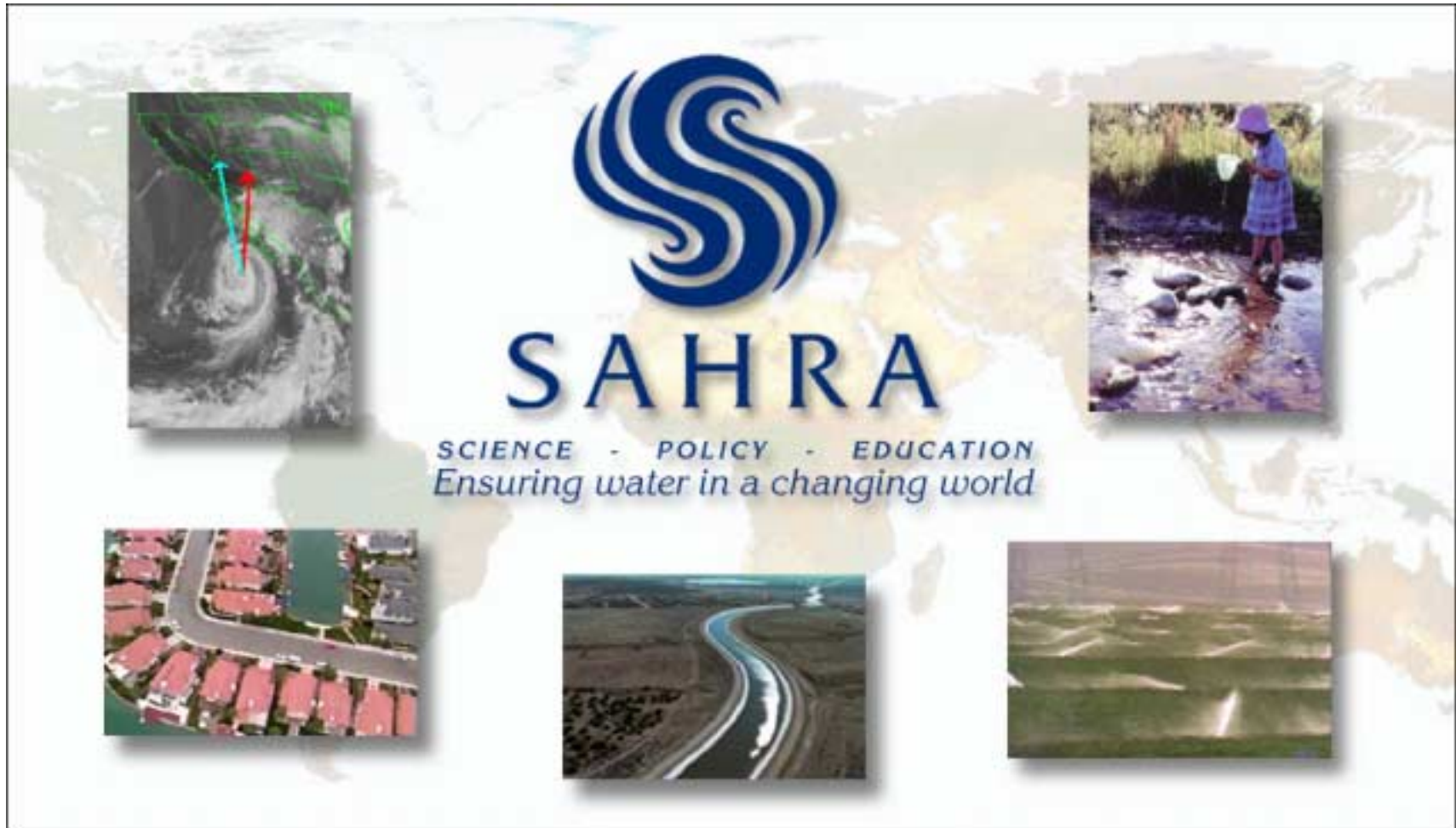
# Workshop on Recharge and Vadose-Zone Processes

Socorro, NM

22-23 March 2001



# *NSF Science and Technology Center*



SAHRA

*Sustainability of semiArid Hydrology and Riparian Areas*

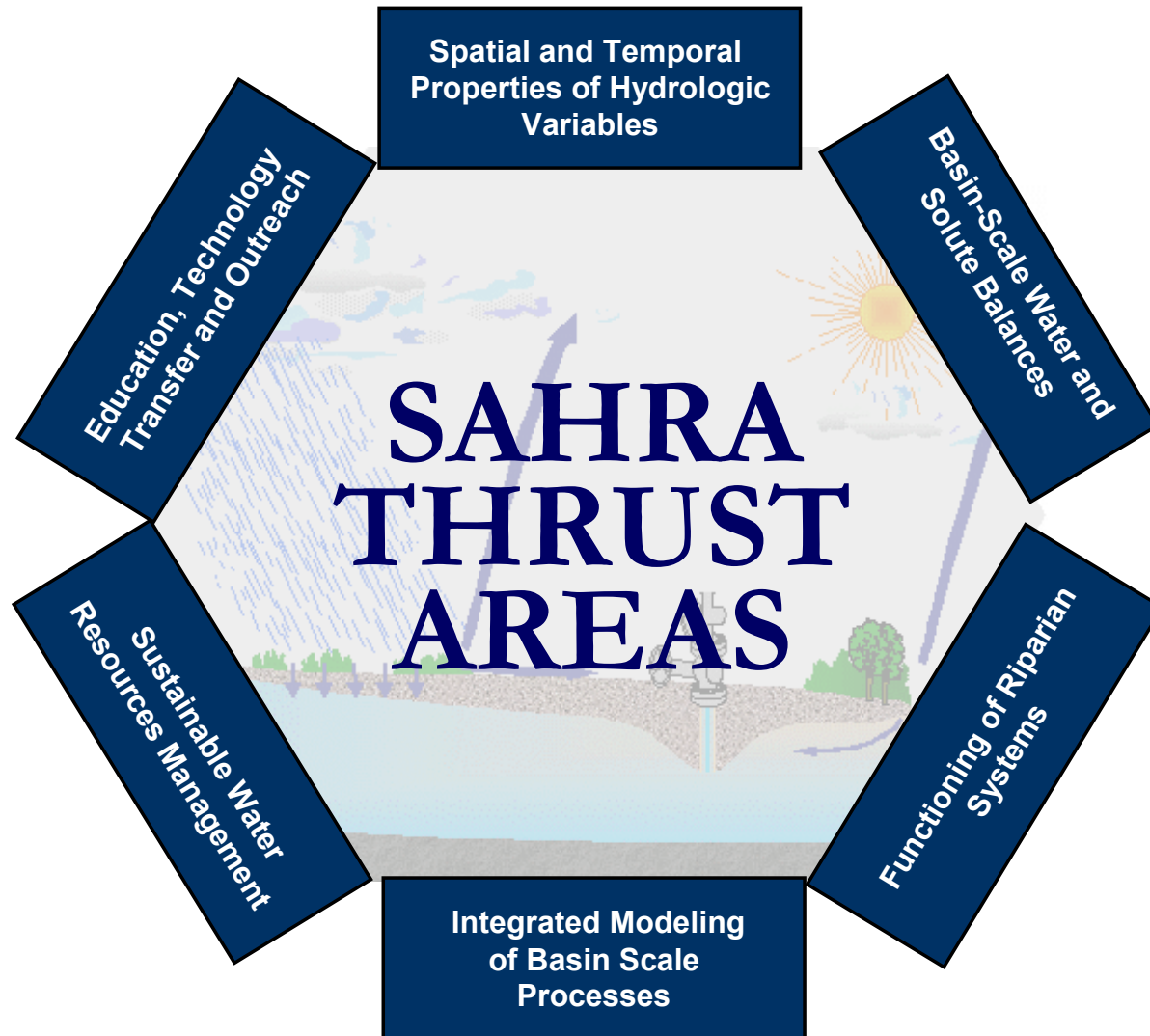
# *Mission Statement*

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The Center will promote sustainable management of water resources in semiarid regions through stakeholder-driven interdisciplinary research, aggressive public outreach and strong education initiatives, leading to rapid dissemination and application of cutting-edge scientific knowledge.



# SAHRA Thrust Areas



# *Reasons for Workshop*

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- New developments out of SAHRA in understanding groundwater recharge and vadose-zone processes
- Topic of research with related work being carried on within several Thrust Areas
- Need to decide on how vadose-groundwater interactions will be handled in SAHRA integrated analyses (e.g., basin-scale modeling, analysis of economic impacts)



# *Objectives*

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- Share research findings on recharge and vadose zone
- Help plan new initiatives in this area
- Foster inter-Thrust Area collaborations
- Coordinate related activities with different Thrust Areas
- Begin to develop a unified approach to assessment of recharge for SAHRA's integrated analyses





# *New Mexico Tech Campus*

Recharge  
Workshop

EES  
Department

Student Union

Pool



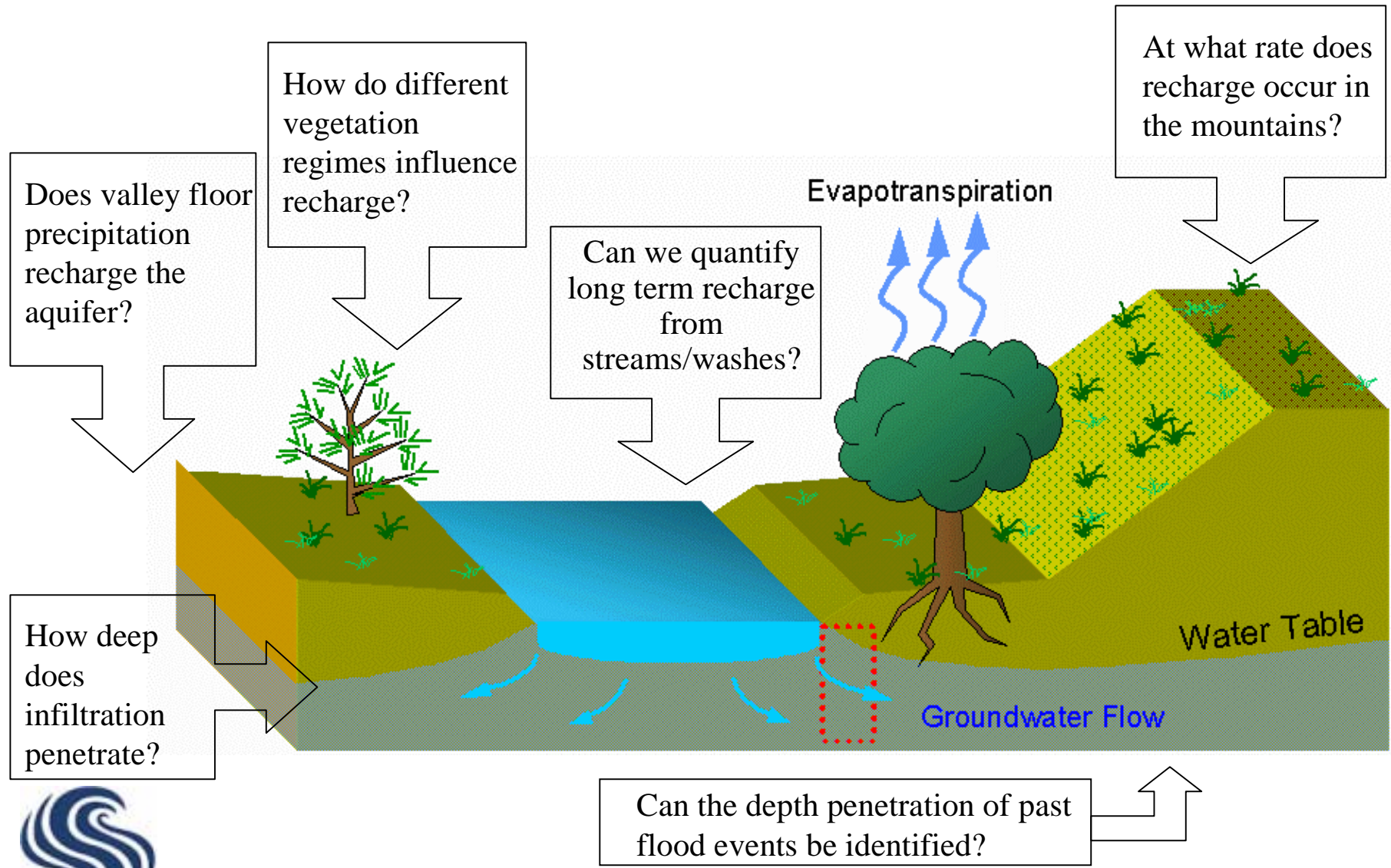
# Questions?

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- Any special presentation needs?  
(e.g., 35 mm slide projector)
- Any questions about Socorro?
- Questions about SAHRA?
- Questions about anything else?



# Recharge - Where, When and How



# Recharge – A Basin Wide Topic

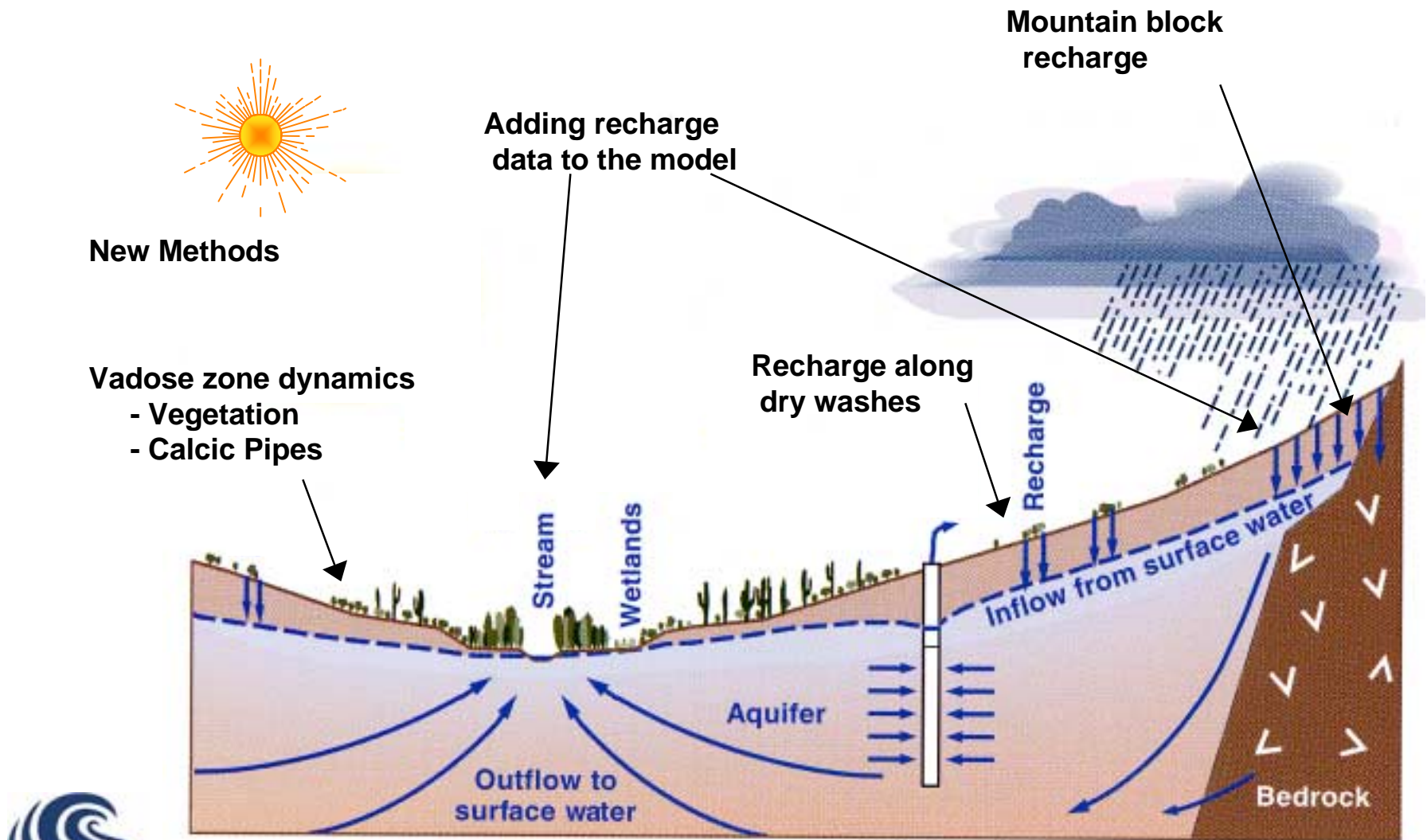


Figure from USGS Fact Sheet 086-00

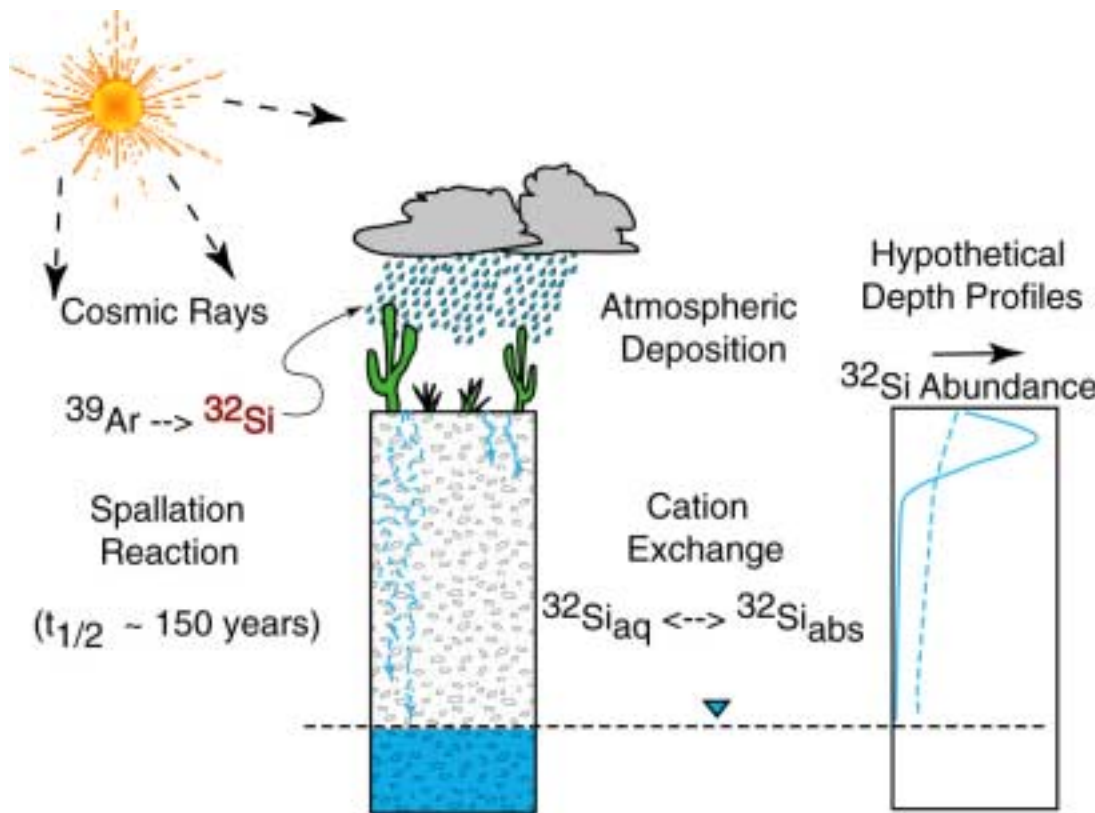


# *New Approached to Vadose-Zone Processes*

Thursday

9:15-10:30

Brenda Ekwurzel



TA1 - ???

TA2 - Isotopes

(noble gases, chlorine isotopes, cosmogenic isotopes)

TA3 - ???



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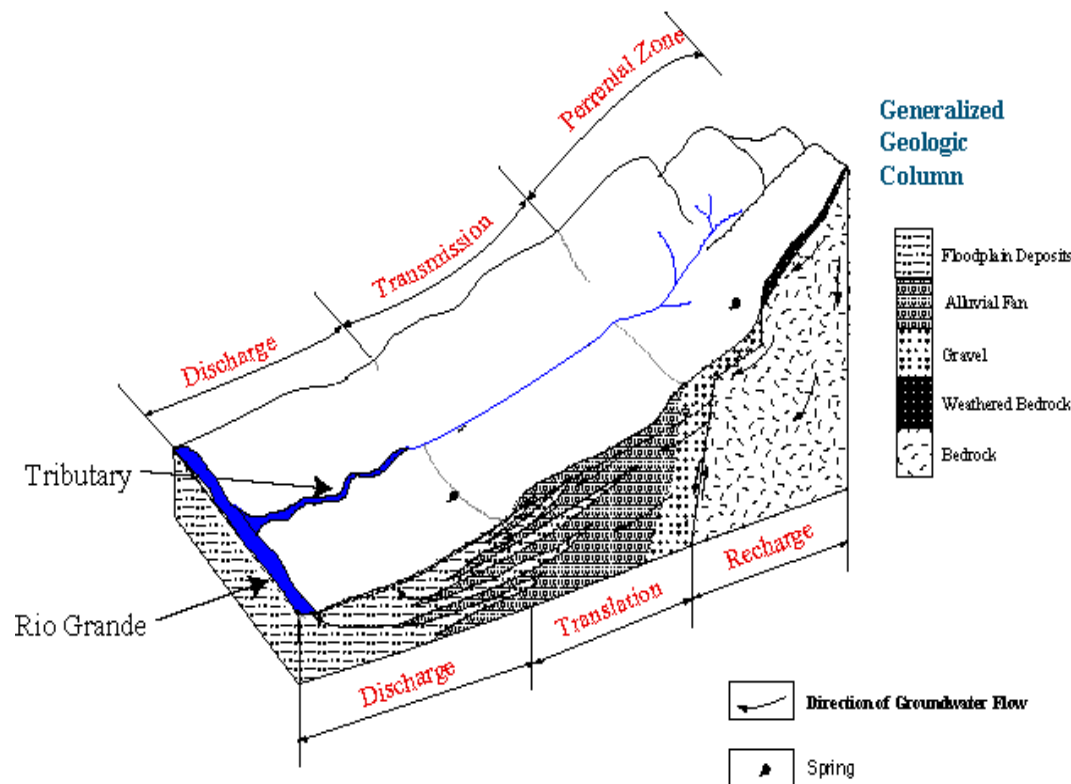
*Sustainability of semiArid Hydrology and Riparian Areas*

# Mountain Block Recharge: Can it be Quantified?

## Mountain Front Hydrology Conceptual Model

Thursday  
10:45-12:00  
Chris Duffy

TA1 – Water Balance  
TA2 – Duffy / Wilson



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# *Recharge along Ephemeral Streams*



Thursday

1:30-2:45

Ty Ferre / Dave Goodrich

**TA1** - Rillito Wash /  
Walnut Gulch

**TA3** - San Pedro Work



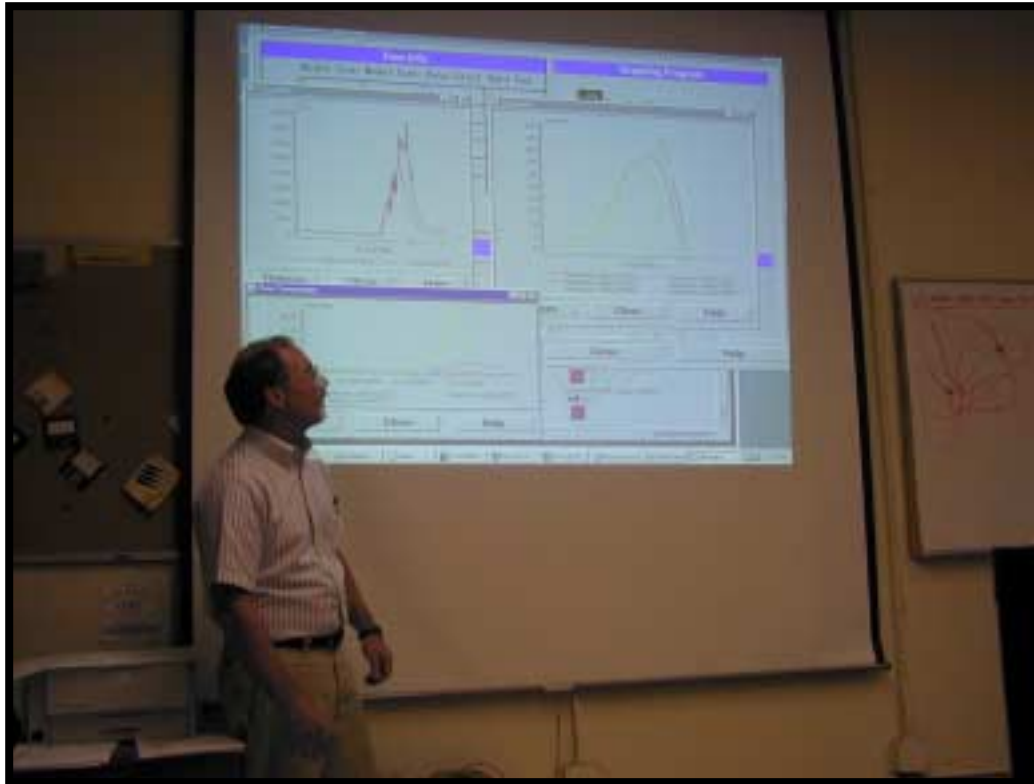
# *Recharge - How does it fit into the model?*

Thursday

3:00-4:15

Larry Winter

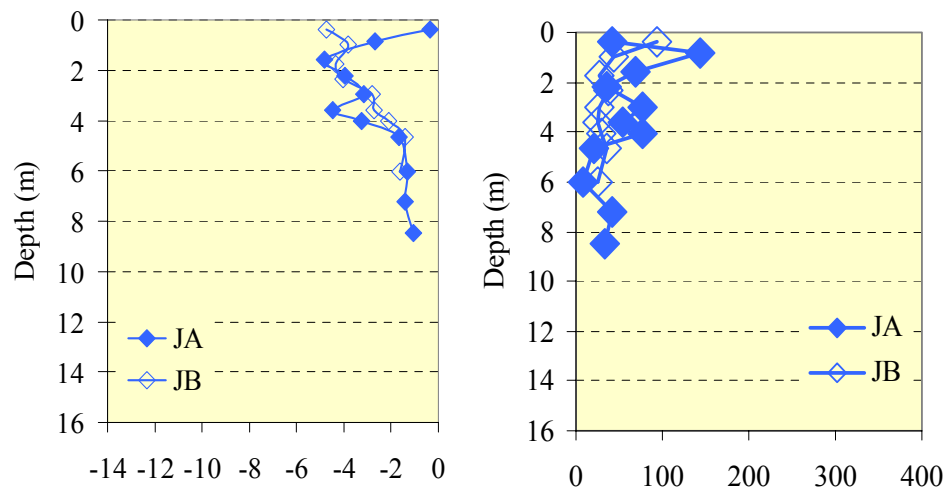
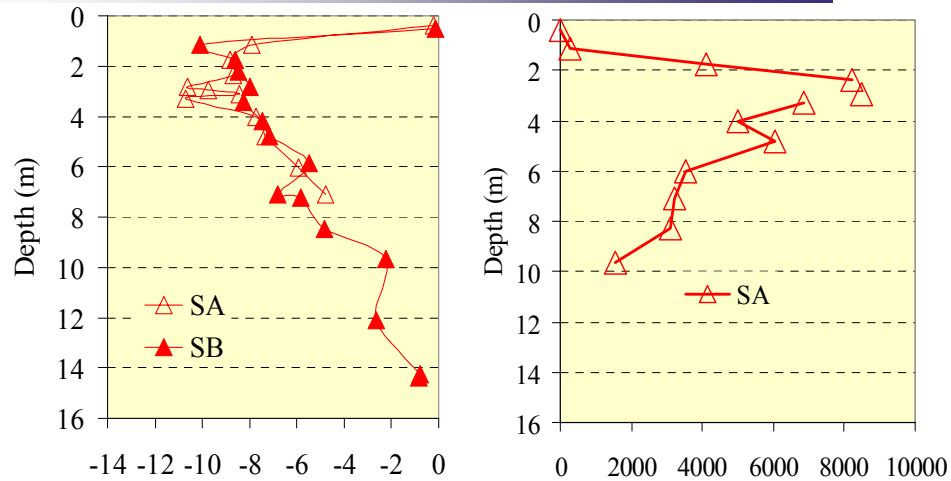
TA4 – LANL Modeling  
Group



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# Desert Floor - "Vegetation Sucks"



$\Psi$  (MPa)

[Cl<sup>-</sup>] (mg/L)

Researchers: M. Walvoord and F. Phillips



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# *Desert Floor - “Swiss Cheese”*



Friday

9:00-10:30

Fred Phillips

**TA2** – Vegetation and  
vadose zone processes /  
Role of soil structure

- **Dissolution pipes** in calcic horizons provide a means for recharge



# Agenda - Thursday

## THURSDAY MARCH 22

- 9:00 a.m. Introduction (Phillips/Hogan)
- 9:15 a.m. New approaches to investigating vado se-zone processes  
Ekwurzel
- 10:30 a.m. Break
- 10:45 a.m. Mountain-block recharge: can it be quantified?  
Duffy
- 12:00 p.m. Lunch
- 1:30 p.m. Recharge along ephemeral streams: scaling up from the borehole to the basin  
Ferre /Goodrich
- 2:45 p.m. Break
- 3:00 p.m. Recharge data: how does it fit into the model?  
Winter
- 4:15 p.m. End of First Day
- 6:00 p.m. Dinner



# *Agenda - Friday*

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## **FRIDAY MARCH 23**

- 9:00 a.m. Introduction and Announcements
- 9:15 a.m. The basin floor: “Swiss cheese” or “vegetation sucks”?  
Phillips
- 10:30 a.m. Break
- 10:45 a.m. Continuation and Wrap-up
- 12:00 p.m. Lunch



# *Linkages Across Thrust Areas*

## New Approaches

Ekwurzel et al. – TA2

Ty Ferre – TA1

## Mountain-Block Recharge

Water Balance above the Mountain Front–TA1

Chris Duffy/John Wilson – TA2

## Recharge Along Ephemeral Streams

Ty Ferre, Walnut Gulch – TA1

San Pedro (Stan Leake et al.) – TA3

## Recharge Data : How does it fit into the model?

Modelers of TA4

## The Basin Floor

“Swiss Cheese” – Jan Hendrickx TA2

“Veg. Sucks” – Walvoord/Phillips TA2

**Sustainable Water Use (TA5)** – linked to amount of recharge

