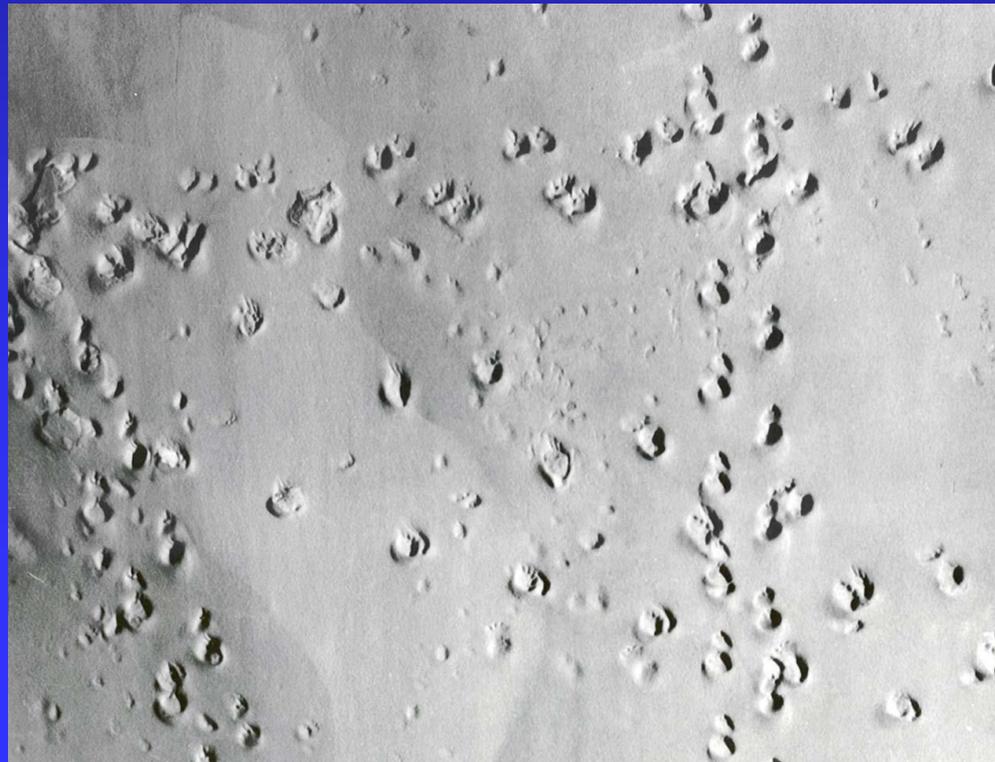


# Can the Bible improve our science?

## Fossil footprints in the Coconino Sandstone

Leonard Brand

Loma Linda University



No creationist “has contributed a single article to any reputable scientific journal.”

Eldredge 1982, *The Monkey Business: A Scientist Looks at Creationism*, p. 83

“Flood geology shows no promise of fruitful interchange with other sciences” . . . It “does not aim at advancing science – it does not seek to extend the range of phenomena that are open to scientific investigation.”

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**IS THIS TRUE?**



Coconino Sandstone  
Permian

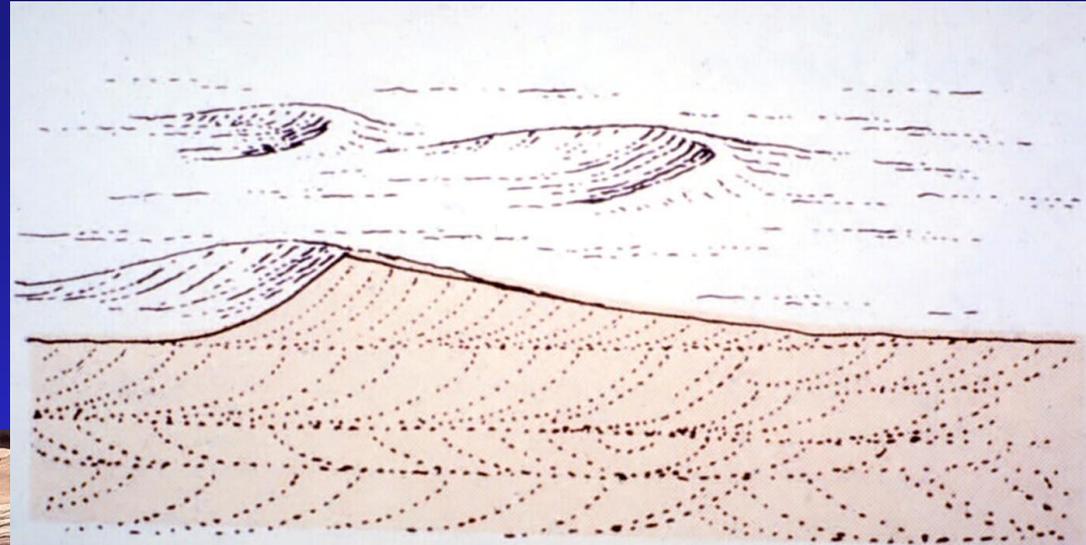


# Introduction:

- The Permian Coconino Sandstone, in N Arizona, is consistently interpreted by geologists as wind deposited (eolian) desert sand dunes
- How does it relate to the biblical global flood account?
- Could there have been episodes of high winds during that event?
- Or is the eolian interpretation wrong?
- Science can address these questions, even if the questions originate from a source outside of science

Cross-bedded sand is formed by currents (wind or water) depositing sand on the faces of dunes

← Current direction



Cross-bedding



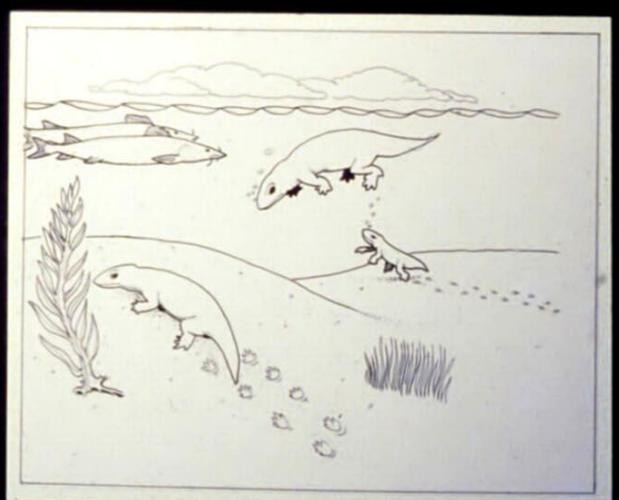
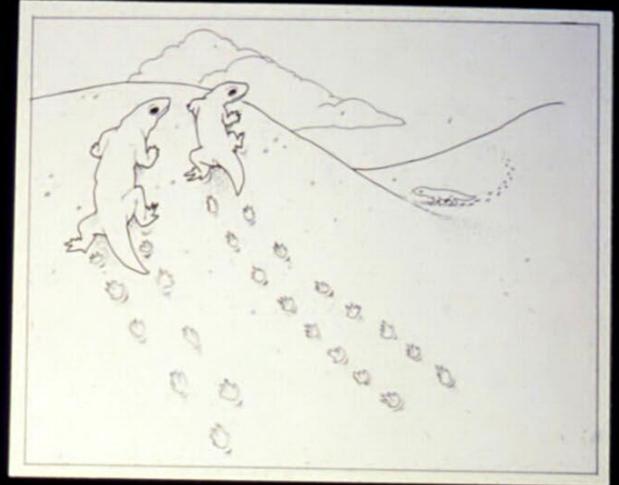
# Modern desert dunefield



# Sand waves underwater



# ENVIRONMENT



# How can the Bible influence scientific research?

Most scientists accept naturalism – no miracles, ever.

How will this affect their science?

If we believe the Bible . . .

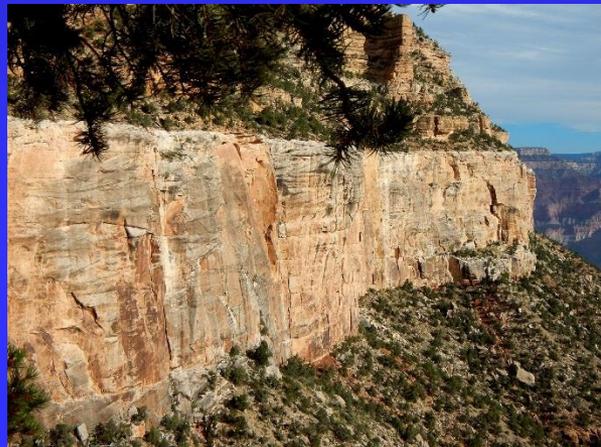
How will this affect our science?



# How can the Bible influence scientific research?

Both of these worldviews influence the **questions** we ask

Either model can stimulate a scientific search for **answers** to the questions



The only fossils in the Coconino SS are fossil animal tracks (amphibians or reptiles)







Experiments to determine in what conditions the tracks are most similar to the fossils



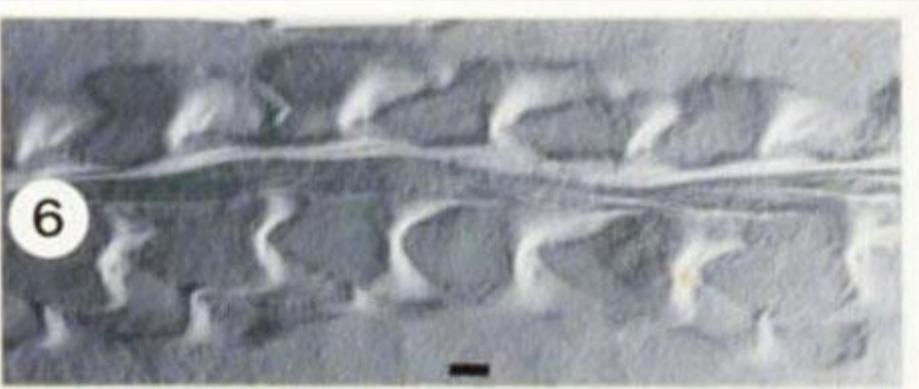
Tracks made underwater were the only ones that had the details that are present in the fossil tracks.



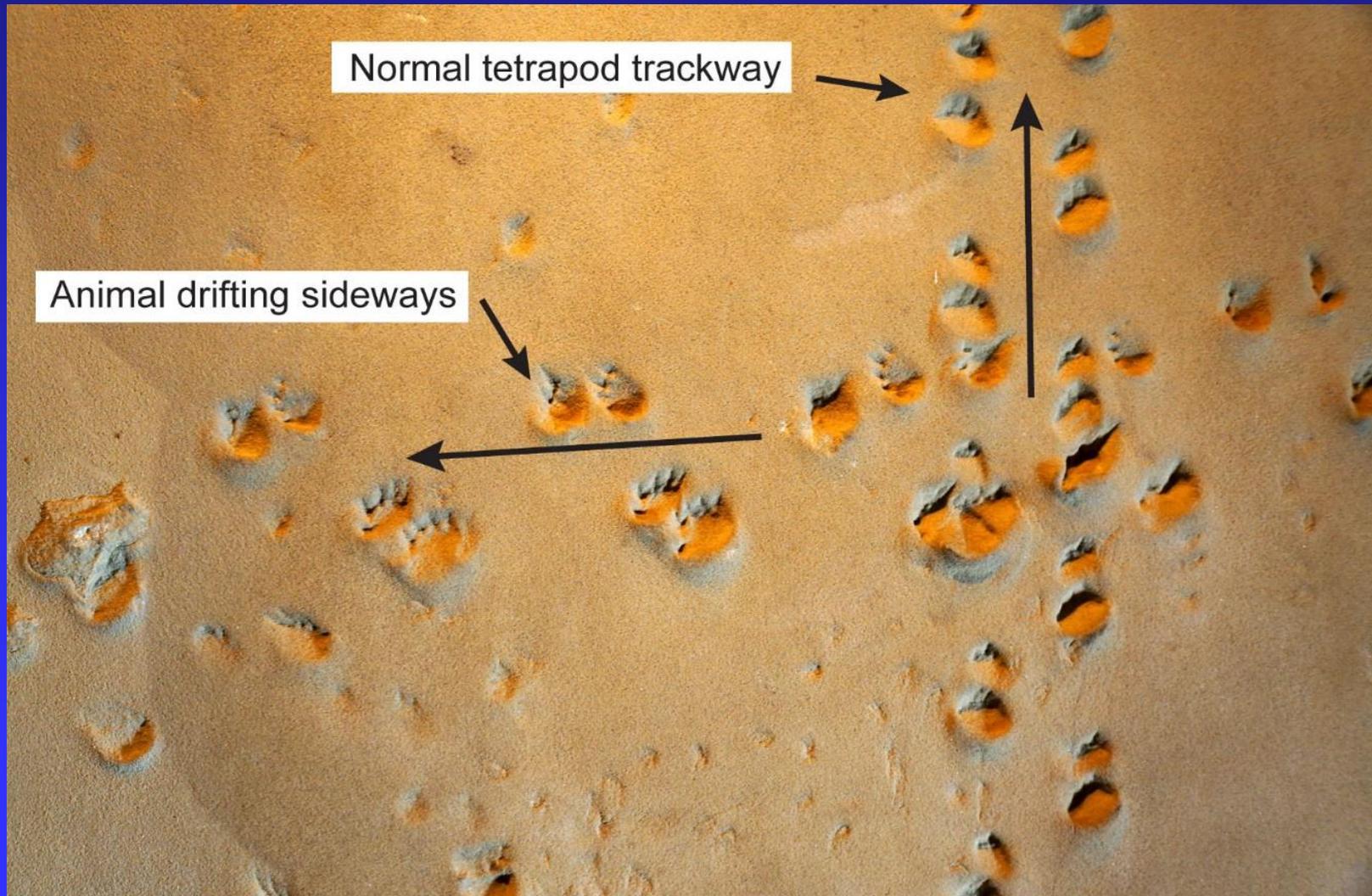
Fossil tracks

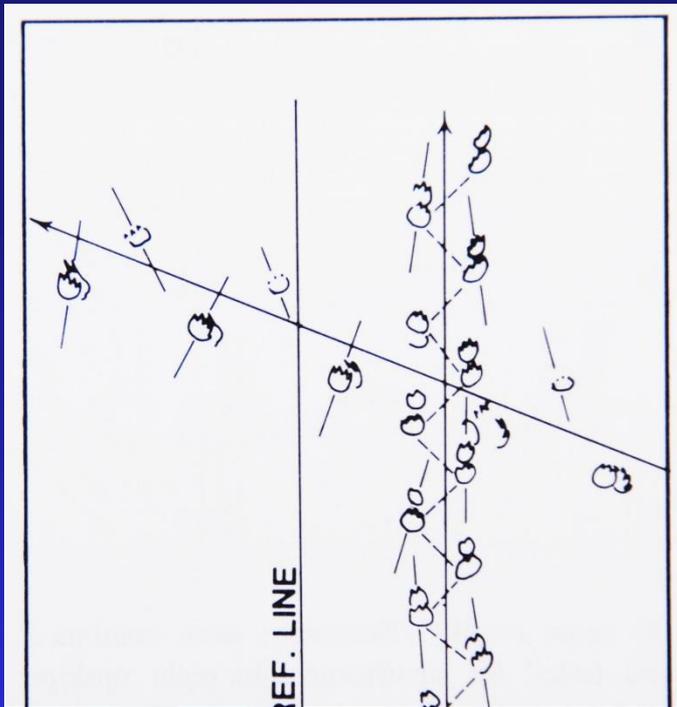
Underwater

Dry sand

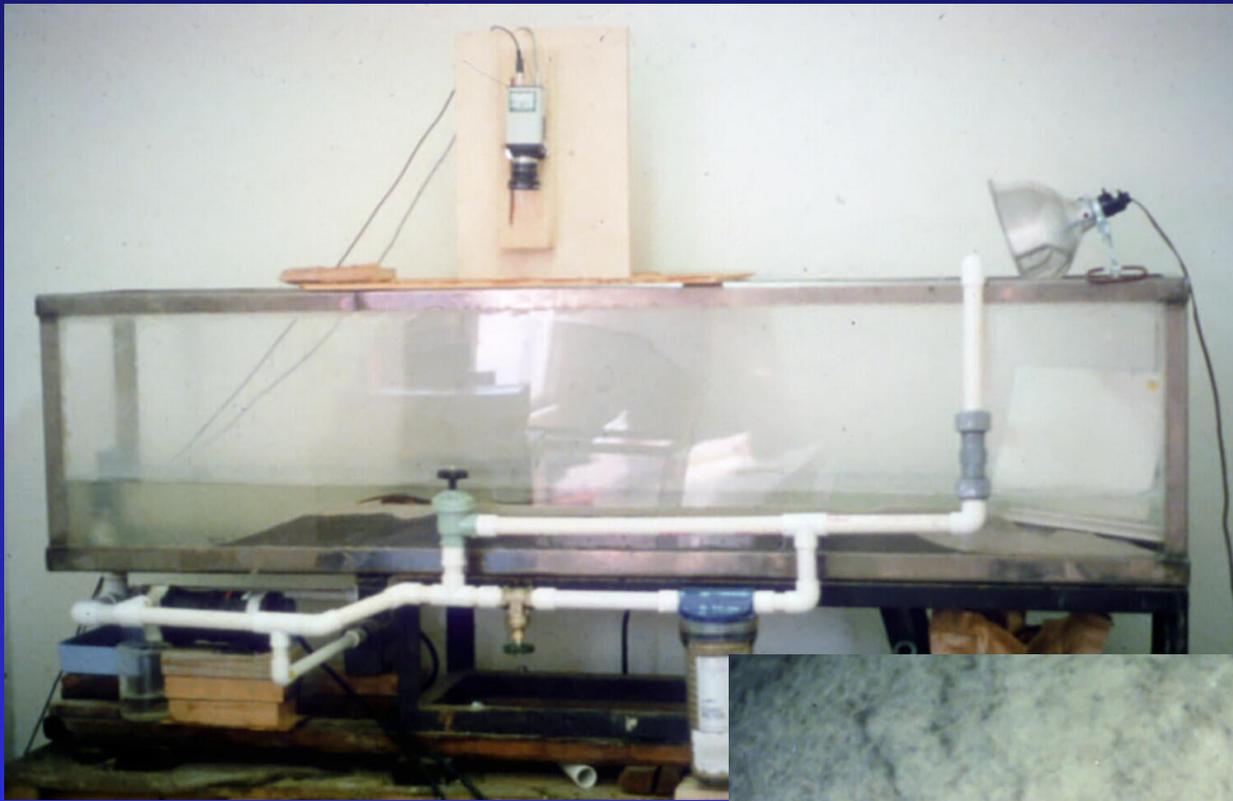


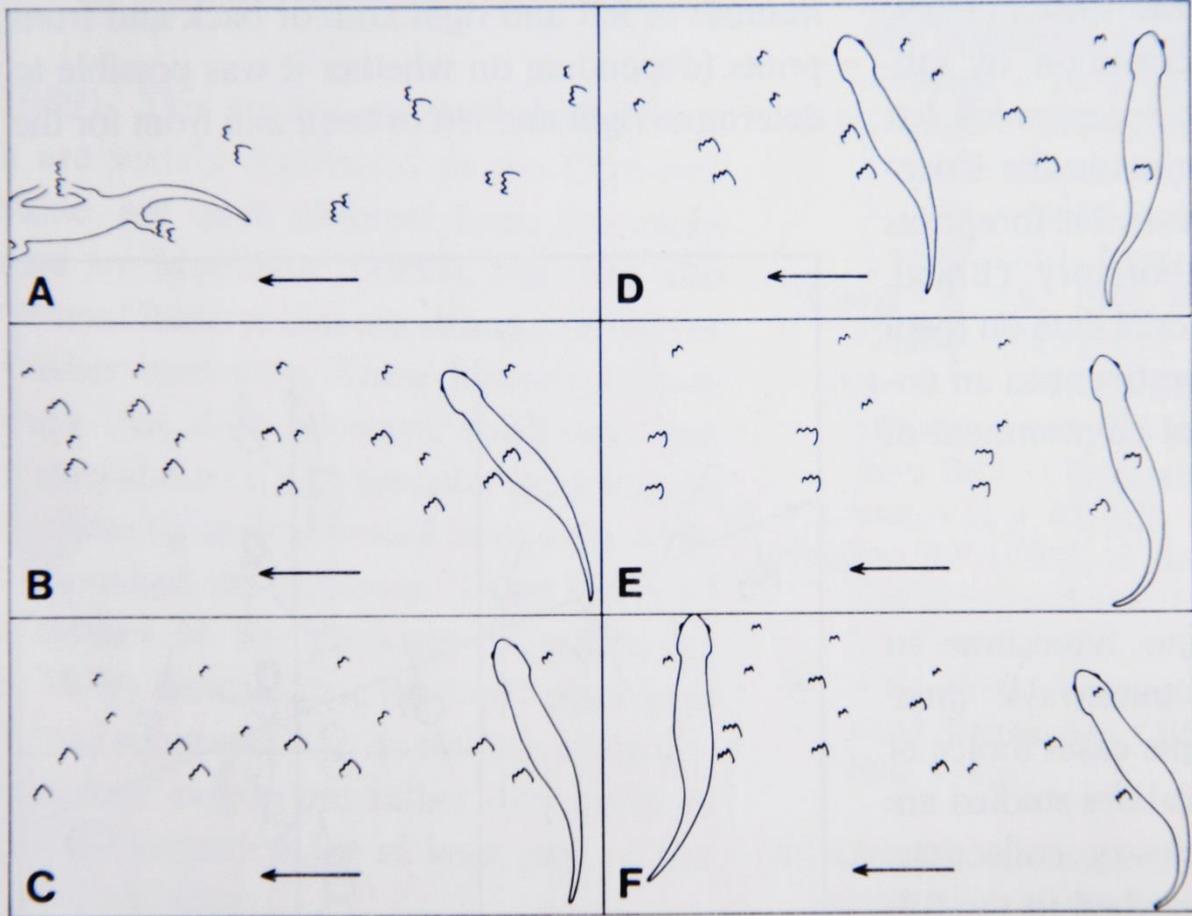
Many of the fossil trackways are unusual. They appear to be four-footed (tetrapod) animals drifting sideways. How can that happen?





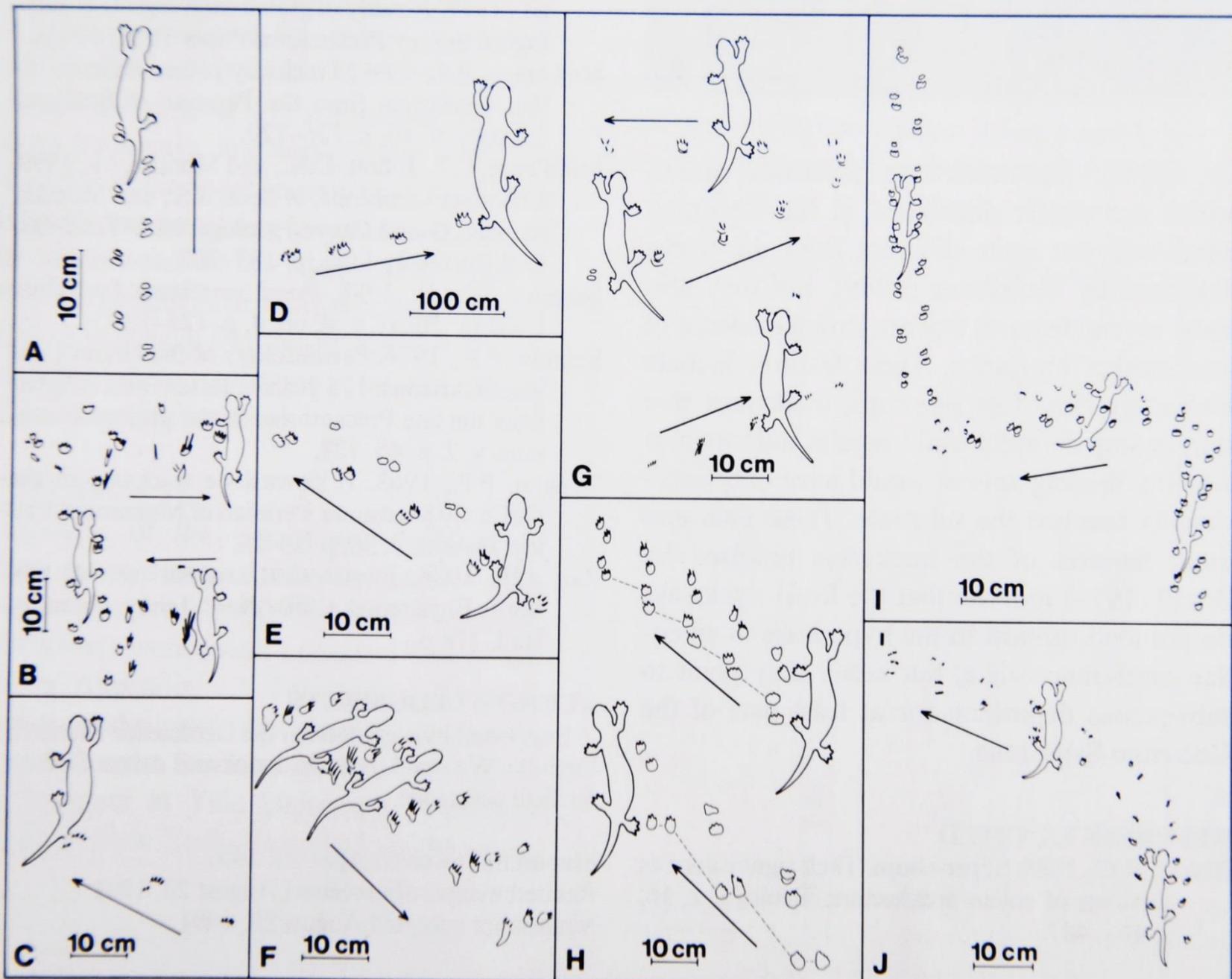
# Experiments



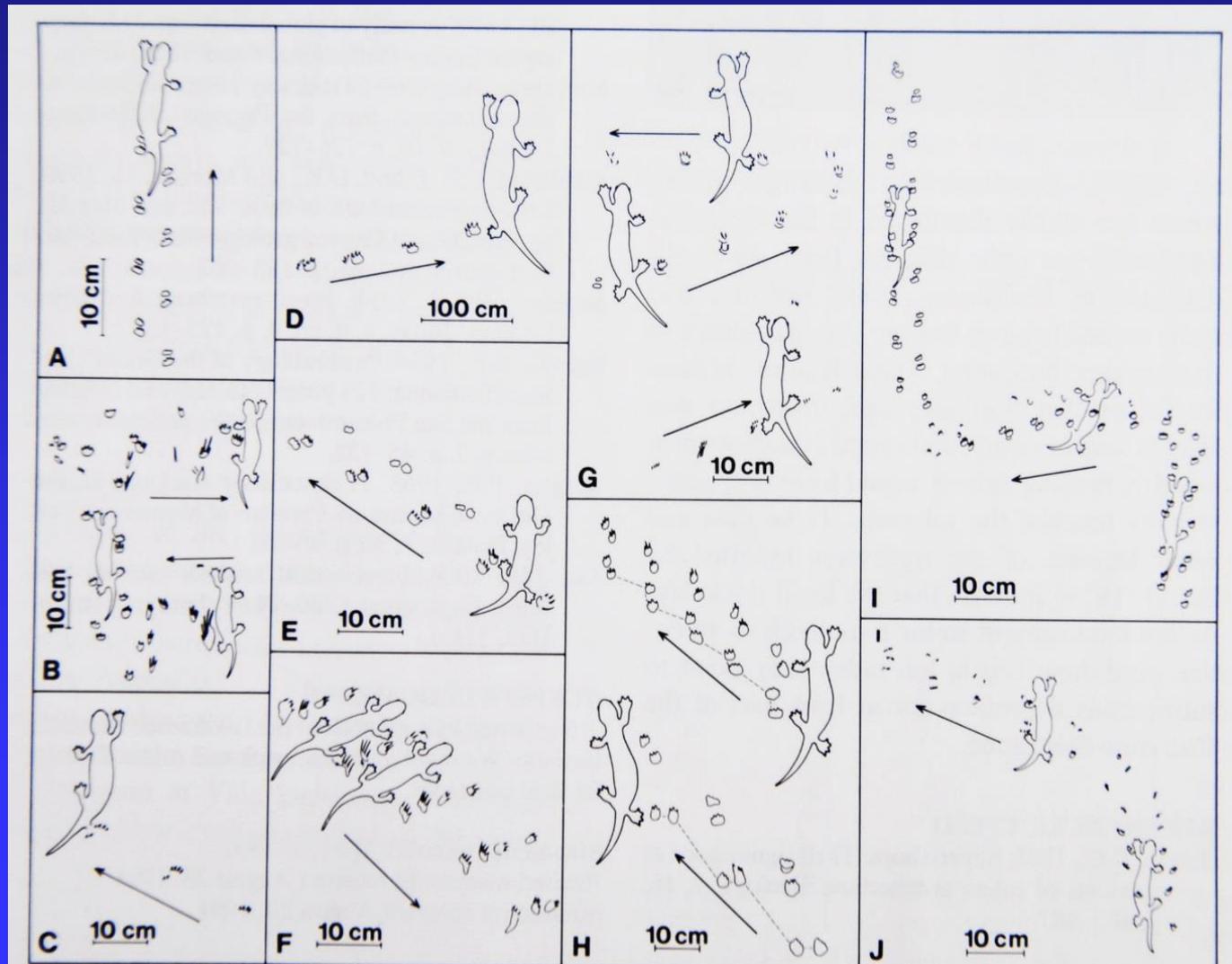


The animals often drift sideways with the water current





The results of the experiments – the sideways drift - can explain all of these fossil trackways



But there is more evidence . . . .

# How could this happen?



He fossil animals did not have wings



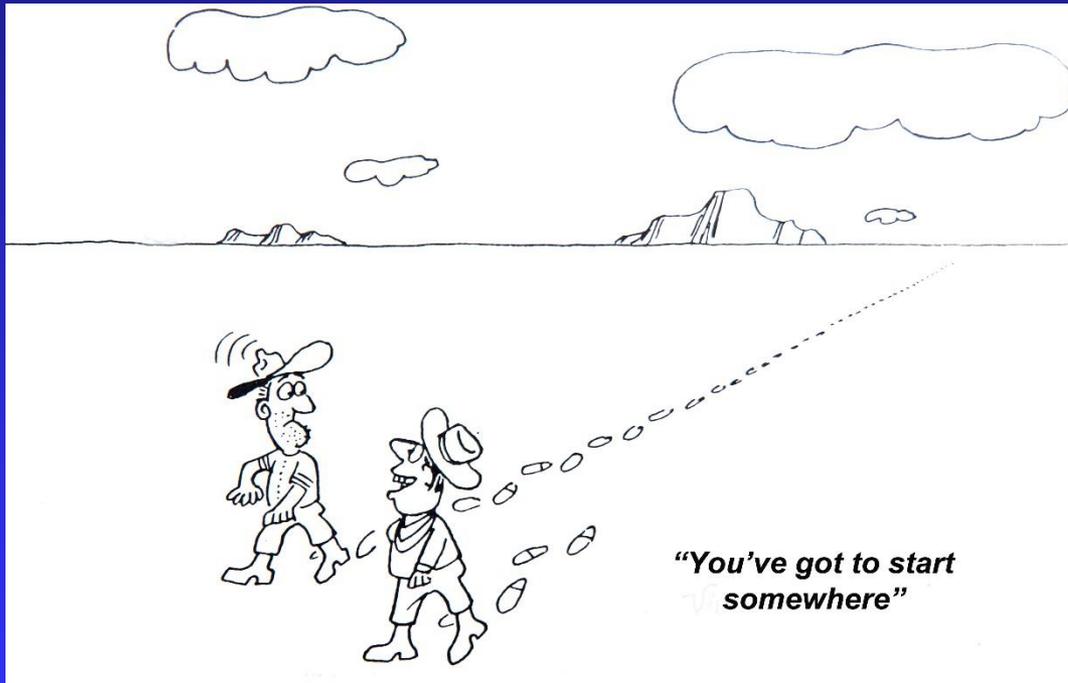
**“You’ve got to start  
somewhere”**



There should be tracks in the circled areas, but there are none. How could this happen?



# ENVIRONMENT



The tracks were apparently made underwater







FIELD AND LABORATORY STUDIES ON THE COCONINO  
SANDSTONE (PERMIAN) VERTEBRATE FOOTPRINTS AND THEIR  
PALEOECOLOGICAL IMPLICATIONS

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(Received ...)

Geology v. 19 (1991): 1201-1204

Fossil vertebrate footprints in the Coconino Sandstone  
(Permian) of northern Arizona: Evidence for underwater origin

Leonard R. Brand, Thu Tang

Department of Natural Sciences, Loma Linda University, Loma Linda, California 92350

prints) was determined for each trackway or  
section of trackway, and the mean of these  
used for comparison with the  
between the

*Ichnos*, v. 4, pp. 225-230, 1996  
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Underprints of vertebrate and invertebrate trackways  
in the Permian Coconino Sandstone in Arizona

Leonard R. Brand<sup>1</sup> and ...

<sup>1</sup>Department of N...

*J. Paleont.*, 70(6), 1996, pp. 1004-1010  
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0022-3360/96/0070-1004\$03.00

VARIATIONS IN SALAMANDER TRACKWAYS RESULTING FROM  
SUBSTRATE DIFFERENCES

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Department of Natural Sciences, Loma Linda University,  
Loma Linda, California 92350

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**Really??**

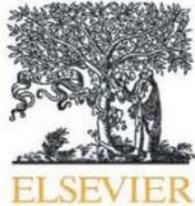
# Other research on the Coconino Sandstone



Mudcracks?

John Whitmore and Ray Strom showed these to be injectites

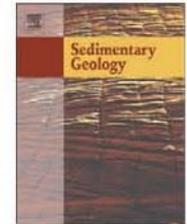




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## Sedimentary Geology

journal homepage: [www.elsevier.com/locate/sedgeo](http://www.elsevier.com/locate/sedgeo)



# Sand injectites at the base of the Coconino Sandstone, Grand Canyon, Arizona (USA)

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### ABSTRACT

In the Grand Canyon, large tabular and wedge shaped sand-filled cracks commonly occur at the base of the Coconino Sandstone, penetrating downward into the coarse siltstones of the Hermit Formation. All previous workers have casually identified the vertical sand-filled cracks as desiccation cracks. Until now, they have never been studied. Cracks and their associated features were found and examined at thirty locations; and it was found that they have characteristics difficult to explain using desiccation mud cracks or large playa

# If we believe the Bible story of creation and the global flood – a biblical worldview:

1. We think of new **questions** to ask.
2. Our eyes are opened to think in new ways not open to those who believe in naturalism.
3. The questions then must be **answered** with quality science – using standard scientific methods
4. **This works** – has been demonstrated in a number of research projects