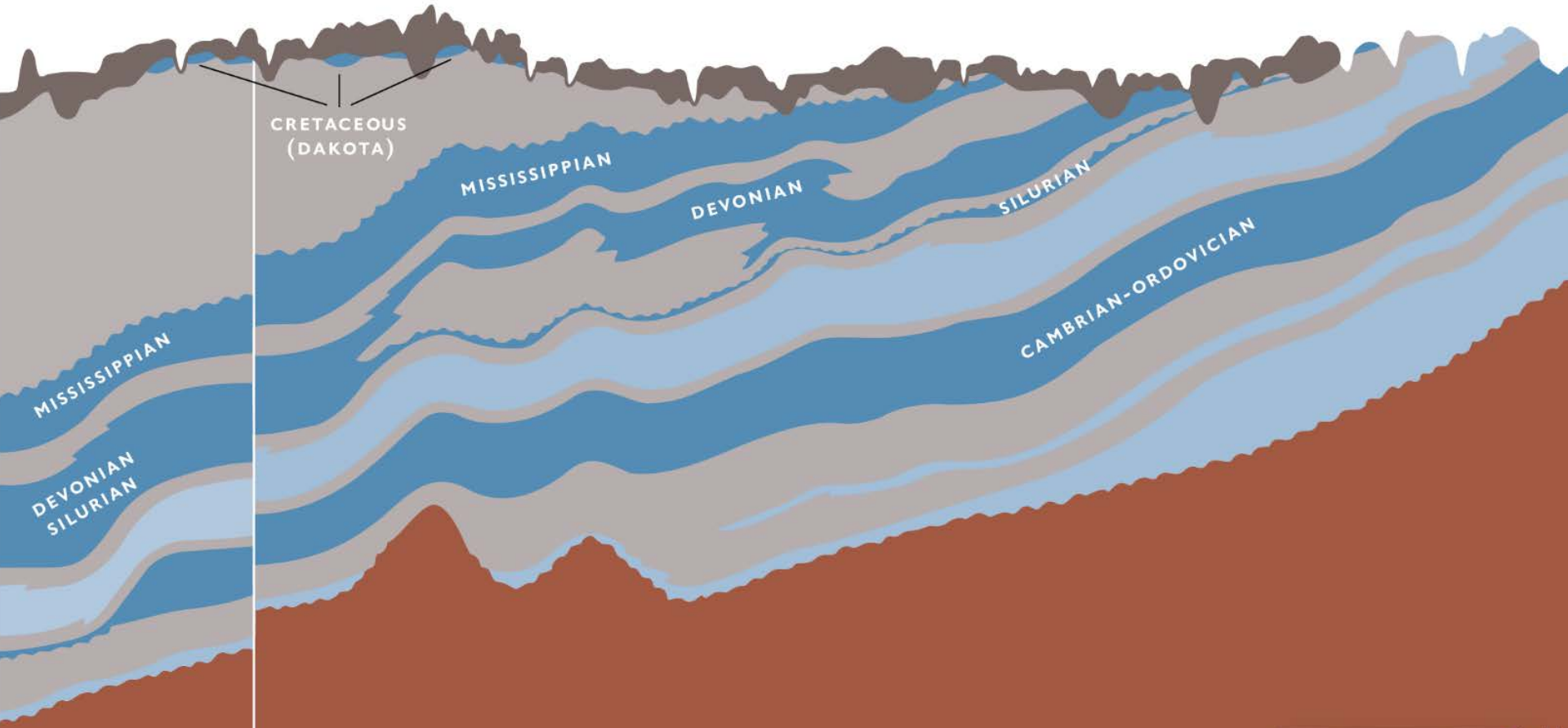
The IGS' Water-Level Network



Rick Langel, IGS; **Jacob King,** IIHR

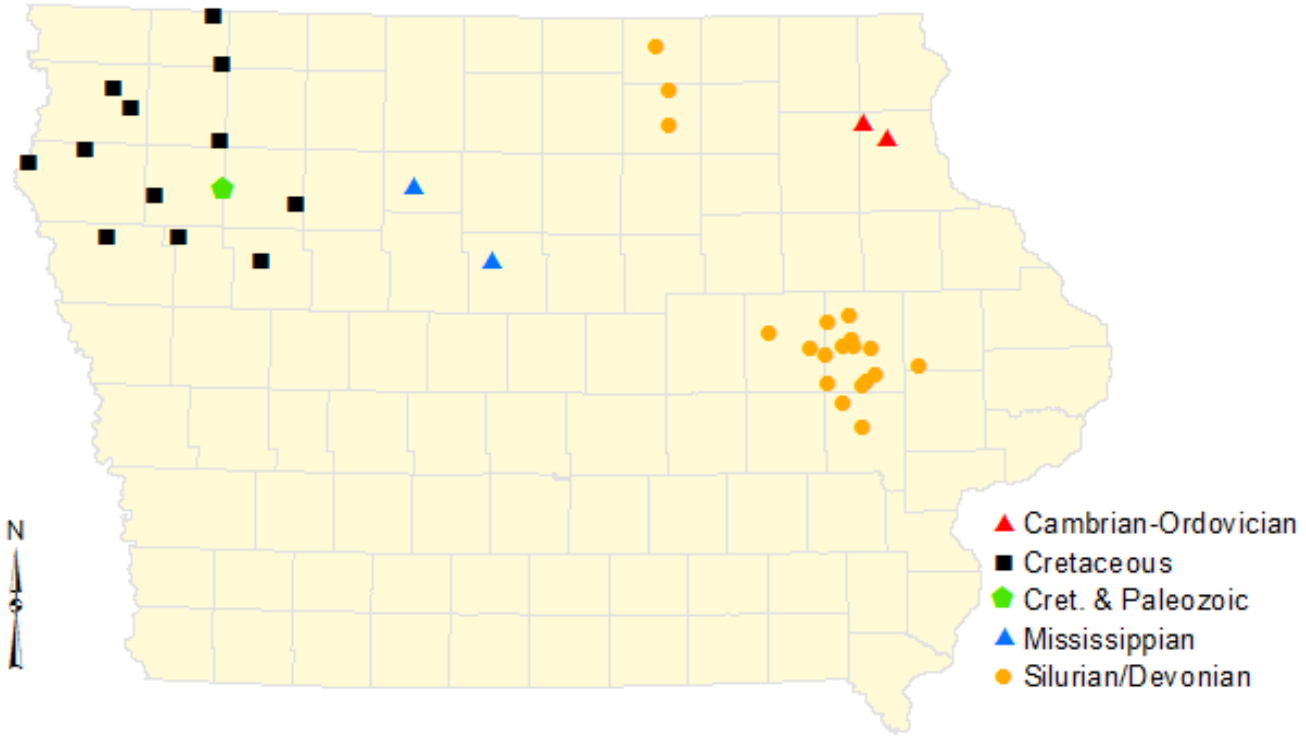
IGS IIHR Hydroscience & Engineering The University of Iowa College of Engineering

IGS' Water-Level Network Wells

60 wells at 36 locations

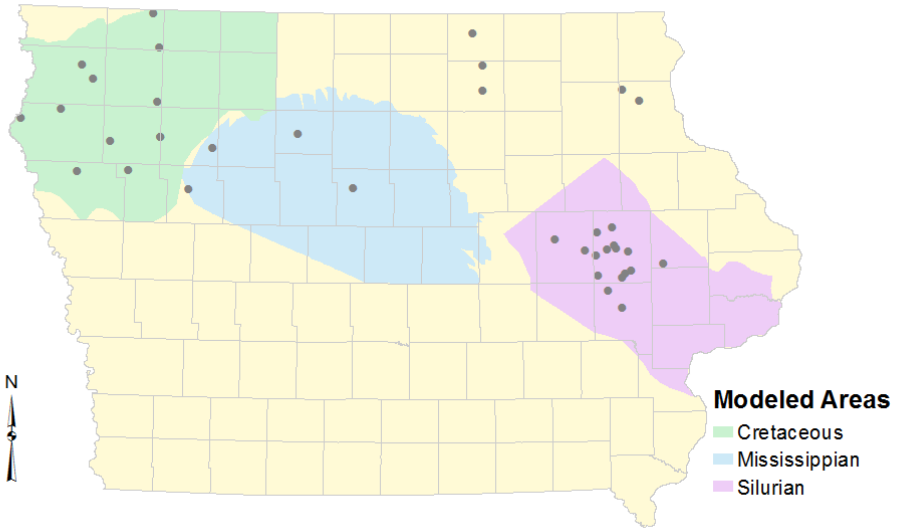
All are dedicated monitoring wells

Many have long-term data records (part of a previous IGS/USGS level network)

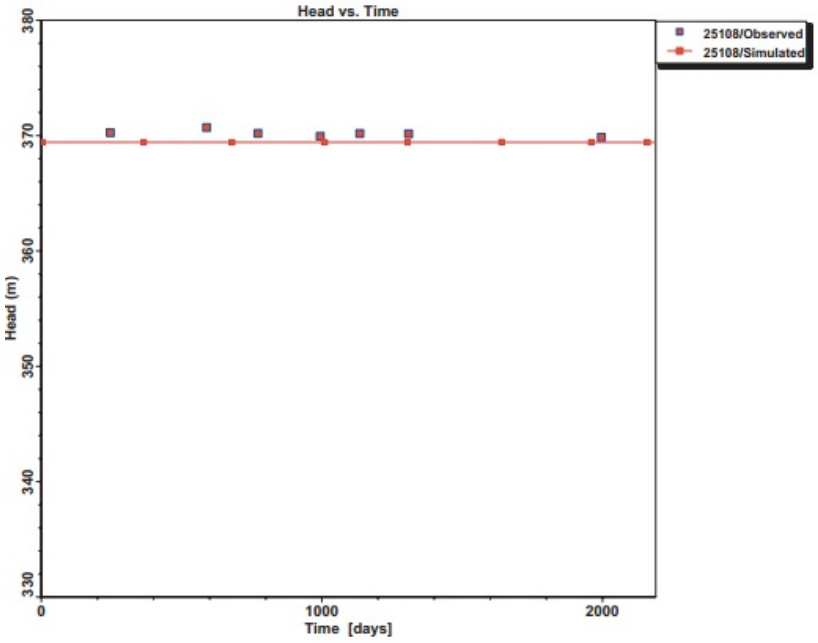


Network Goal #1 – Provide data for calibration of groundwater models to evaluate aquifer sustainability

Bedrock aquifers modeled that utilized water-level data

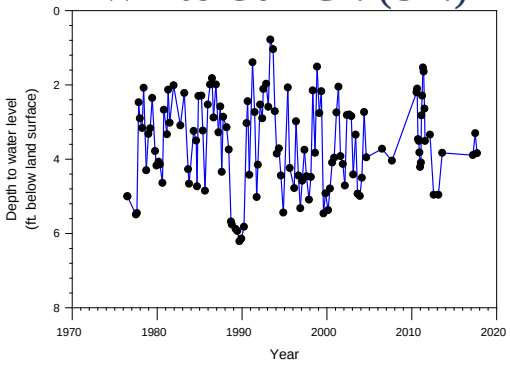


Well water-levels used to evaluate model

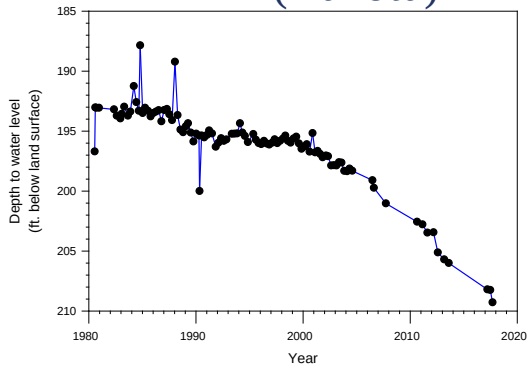


Network Goal #2 – Provide a historical record of water-level changes in the state's aquifers

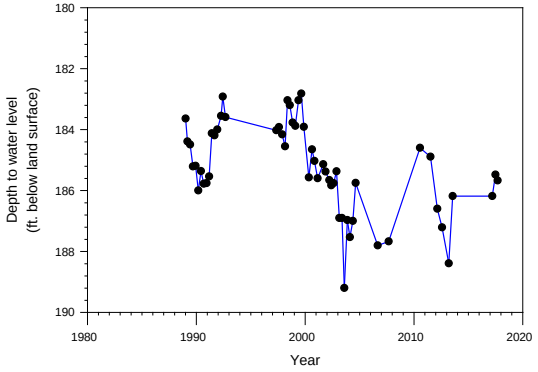
White Oak Cr. (Sil.)



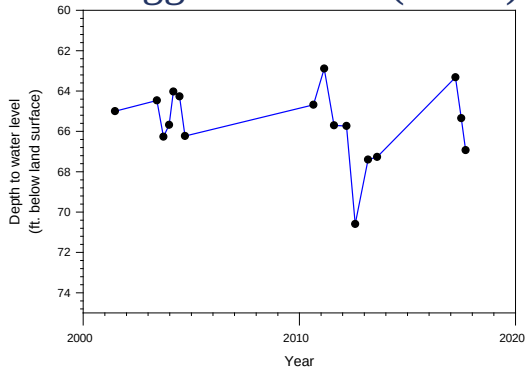
D-44 (Dakota)



BS2-G (Camb.-Ordo.)



Briggs Woods 3 (Miss.)



Current NGWMN project

Current status – currently selecting and classifying wells

- All well data (ex. lithological data, construction data, & historic water-level) has been entered into IGS well database

  All IGS network wells meet NGWMN minimum data requirements

- Prototype web services have been developed

Plans – goal is to be completed by February 2018

- Coordinate with USGS to finalize well selection and classification
- Enter wells into the Well Registry
- Finalize web services

Planned strategy for NGWMN selection

Strategy for selecting wells

- Is the well completed in a single or multiple geologic formation?
- Do the wells meet the recommended NGWMN density?

Strategy for classifying into subnetworks

- Does the wells historic water-levels show trends?
- Do modeling results indicate any significant changes to water levels near the wells?
- How many CAFOs exist a 1 mile radius of the well?
- How many DNR issues water-use permits within a 3 mi. radius?
- Does the well fall within a capture zone of a public water supply well?

Sites are all dedicated monitoring wells = Trend sites

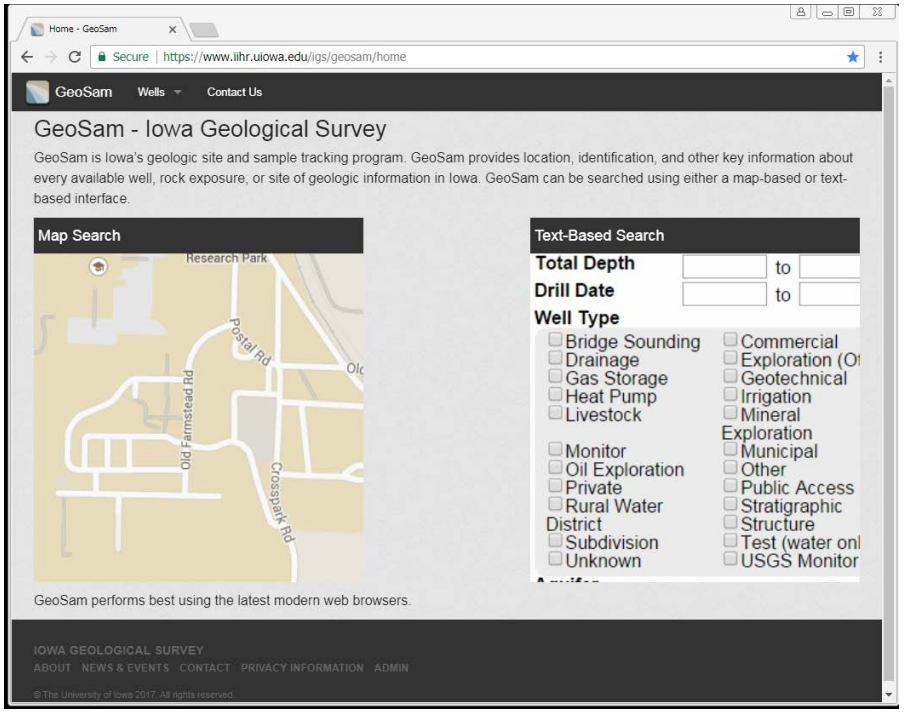
Anticipated additions to the NGWMN

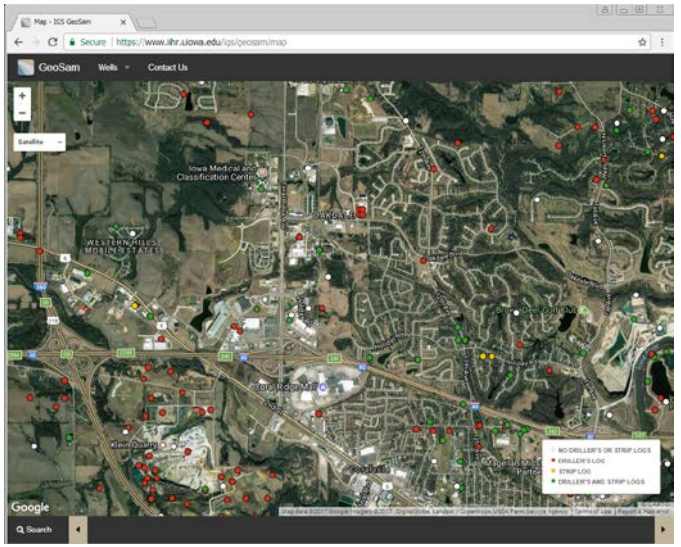
Aquifer	# IGS wells	Est. to NGWMN	Comments
Quaternary	5	?	Is NWGMN interested in till wells?
Cretaceous	13	10-12	Some questions about casing; one well is damaged and needs repair
Mississippian	6	4	Multiple wells completed in same formation
Silurian/Devonian	33	15-25	Some wells open multiple formation
Cambrian-Ordovician	2	2	
Paleozoic	1	?	Open to multiple Camb./Ord. formations

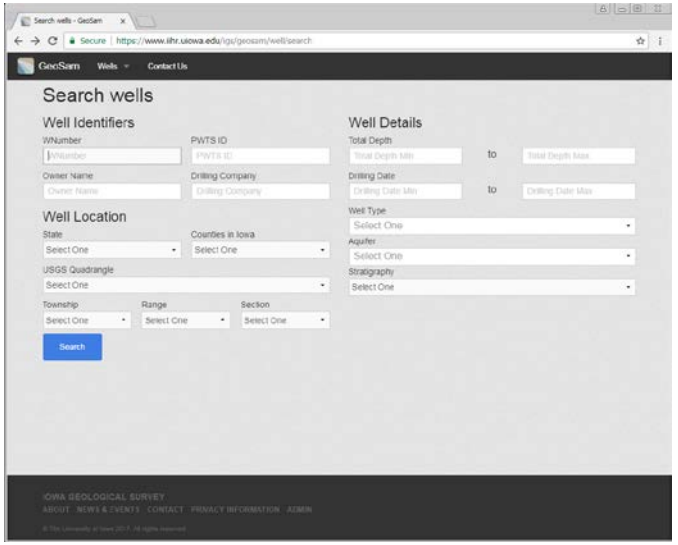
Differences between NGWMN protocols

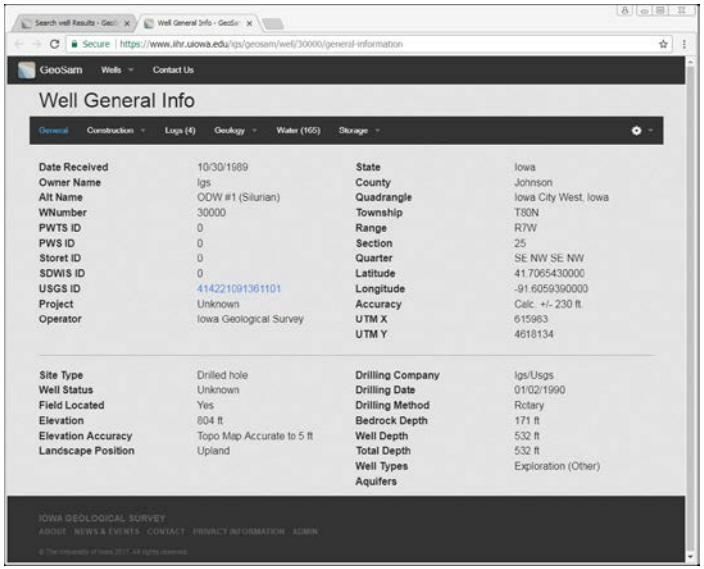
1. Need to establish permanent measuring points
2. Need to establish a procedure for calibrating e-lines

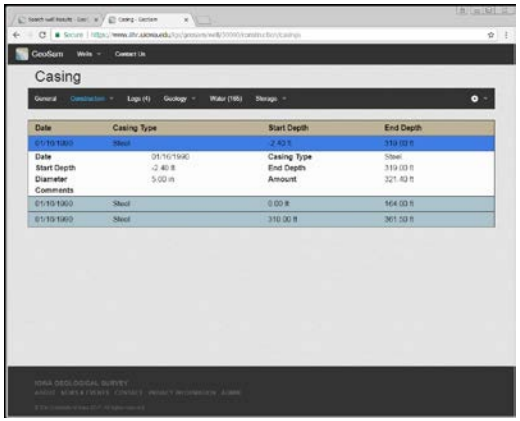
IGS' well database – GeoSam

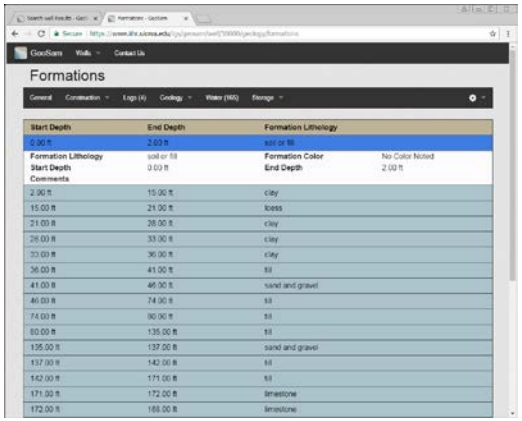


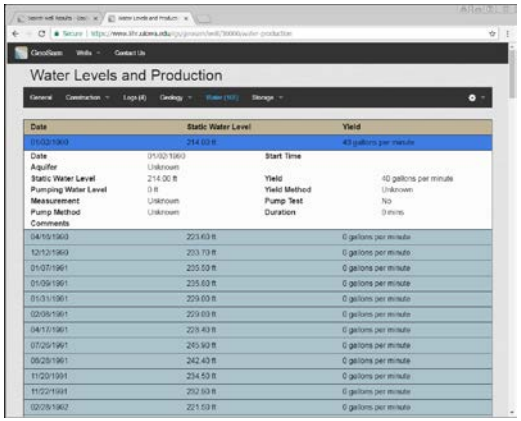












IGS IIHR Hydroscience & Engineering The University of Iowa College of Engineering

Questions?

Rick Langel, IGS—richard-langel@uiowa.edu
Jacob King, IIHR—jacob-king@uiowa.edu

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