GeoScience Papers of the Future

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Goals
As part of the EarthCube GeoSoft project for software stewardship in geosciences, train a cohort of early career researchers on digital scholarship
• Each writes a paper with open publication and citation of all data, software, workflow, and provenance using unique identifiers and proper metadata
• A joint paper co-authored by all participants discussing challenging issues, best practices, and benefits to geoscientists for different areas and methodologies

Outcomes
• A Special Issue of the AGU Earth and Space Sciences journal that will include all GPFs from this activity
  - Editors: Chris Duffy, Scott Peckham, Cedric David, and Karan Venayagamoorthy

Earth and Space Science

• Special Issue will be widely advertised by AGU calling for contributions from the community
• Training sessions will be given at ESIP Summer Meeting, AGU, and can be done for other events

Effort Required
• 2-4 hours a week for 4 months in Spring 2015
  - 2-day face-to-face meeting (Feb) preceded by 2 preparatory telecons (Dec-Jan) followed by biweekly calls (March-May)
  - Most of the work planned at a face-to-face meeting, with about 2 hours of work per week after that

Training
Topics included:
• Make data accessible in a public repository and with a DOI/PURL
• Document the provenance of the results
• Document the data analysis workflow
• Make software accessible in a public repository and with a DOI/PURL
• Make software executable by others
• Document software by specifying general metadata
• Document domain metadata to describe the software
• Prepare the article for publication and cite data, software, workflow, and provenance

Tracking the Work: the Organic Data Science Semantic Wiki

Author | Area | Type of paper
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David | Hydrology modeling | Reproduce prior publication
Demir | Hydrology sensor network | New contribution
Fulweiler | Biogeochemistry in marine ecology | New contribution
Goodall | Hydrology visualization | New contribution
Karlstrom | Volcanic vent clustering | New contribution
Lee | Regional climate model evaluation | Reproduce prior publication
Mills | Geochemistry, marine microbiology | New contribution
Oh | Tropical meteorology | Reproduce prior publication
Pierce | Multi-Criteria Spatial Decision Support Energy-Water-Mineral Case | New contribution and extend prior publication
Pope | Glaciology | Reproduce prior publication
Tzeng | Ocean fisheries | Reproduce and extend prior publication
Villamizar | River ecohydrology | New contribution
Yu | Hydrologic modeling | Reproduce prior publication

Challenge: Overcoming Barriers for Software Sharing
• “No one would use my code if I shared it”
• “My code is really bad”
• “My code is not ready to be shared”
• “Sharing my software will take a lot of time”
• “I won’t get anything out of sharing my software”
• “I’ve shared software before, bad things happened”
• “I work for the government”
• “I want to commercialize my software”
• “I don’t want anyone to commercialize my software”
• “I don’t know where to start!”