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HRE31-P02 Room:Poster Time:May 2 16:15-17:30

Gravity monitoring at the Farnsworth CO2-EOR site, TX

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Time-lapse gravity measurements with a combination of absolute and relative observation array will reduce uncertainties caused by regional gravity variations. The technique is called hybrid gravity measurement. By adding continuous measurement with a superconducting gravimeter (SG) to the hybrid system we are applying the super-hybrid gravity monitoring at the Farnsworth unit (FWU) in TX along with SWP. We started baseline measurement in January 2013. Using SG and barometric data at FWU, we obtained average gravity-atmosphere admittances. The observed admittances during storms can be far from the mean admittance. We often observed several outstanding responses to atmospheric pressure changes. Comparing with precipitation, soil moisture and atmospheric pressure the residuals were attributed to hydrologic components and/or local atmosphere admittance. Several circular irrigation systems work at FWU. At each system water is pumped from a nearby well to the center of the system. The process will result in the redistribution of mass which may result in gravity signals. Basically the booms rotate to cover the circular field over an approximately three day cycle during agricultural season, however the exact watering pattern varies from field to field. We have tried to monitor the watering effects.

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Keywords: Fansworth, CO2-EOR, gravity monitoring, superconducting gravimeter