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Geothermal Energy and Geofluids Group

TANGO: Techno-economic Analysis of Geo-energy Systems

Tsubasa Onishi, Morteza Esmaeilpour, Allan Leal, K. P. Hau, Jasper de Reus, Martin. O. Saar

Geothermal Energy & Geofluids Group, Institute of Geophysics, ETH Zurich, Switzerland

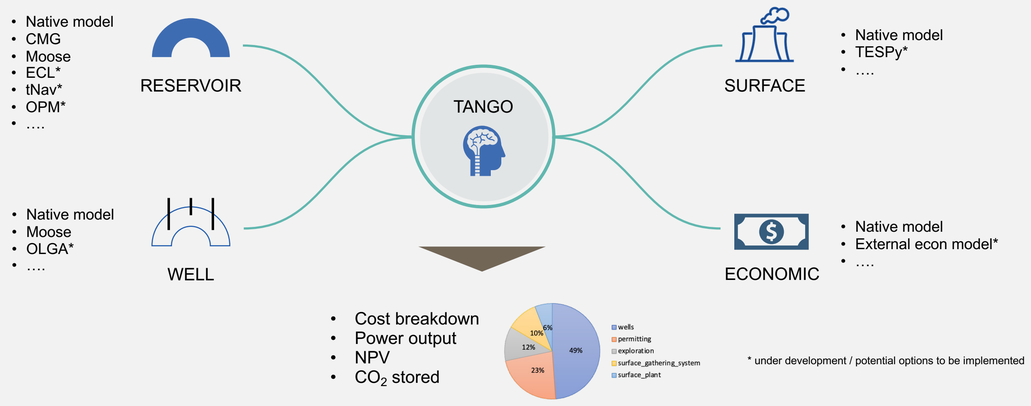
1 Introduction

Sustainable geo-energy technologies, including geothermal energy extraction, carbon dioxide sequestration/utilization, hydrogen conversion/storage/retrieval, and aquifer thermal energy storage, in some cases combined, have significant potential to achieve international energy-sector decarbonization targets. Nonetheless, their widespread implementation is often hindered by technical feasibility and economic viability. Hence, conducting comprehensive techno-economic analysis is important when deploying these geo-energy systems.

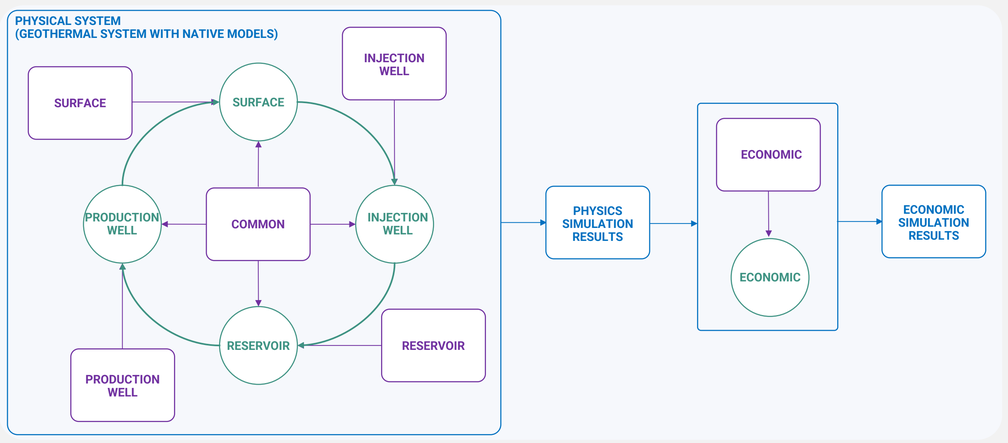
We present TANGO, which is an integrated techno-economic simulation tool designed to offer flexibility, allowing for a comprehensive evaluation of various geo-energy operations across different fidelity levels.

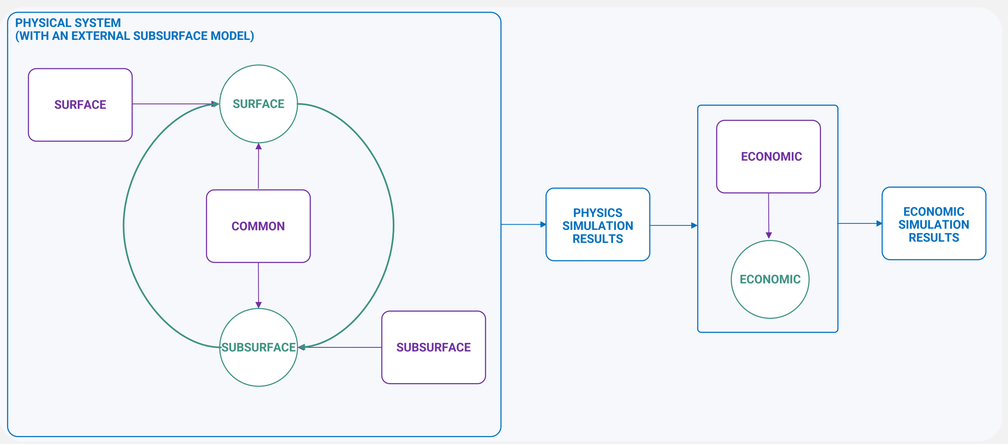
2 TANGO Overview

Overview



Examples





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CPG Consortium

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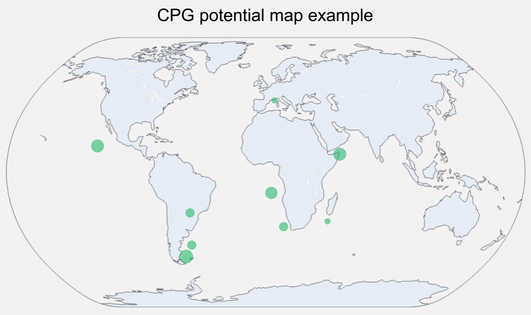
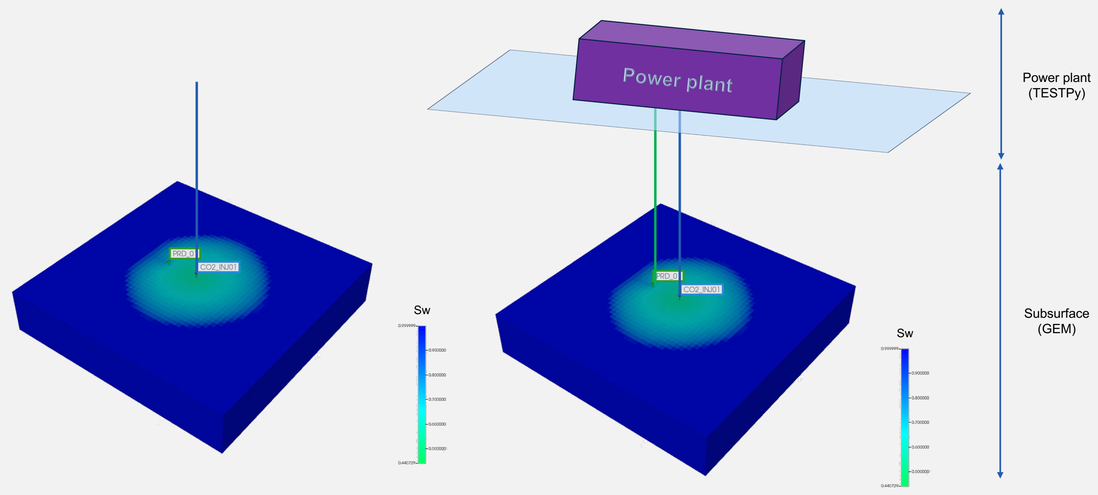
3 Applications

CO_2 Plume Geothermal (CPG) Potential Studies



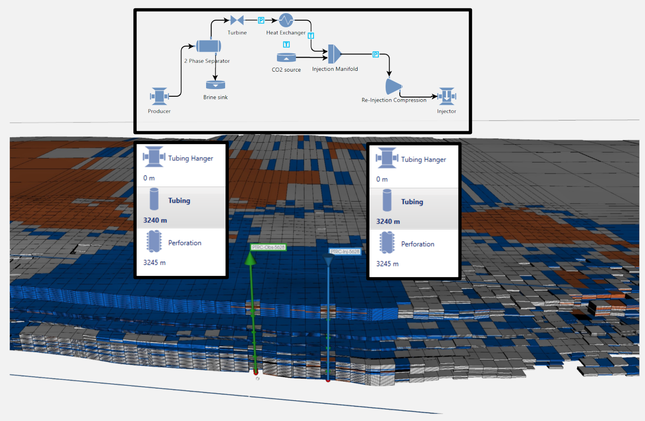
CCS
Reservoir model + econ model

CCS + CPG
Reservoir model + surface model + econ model

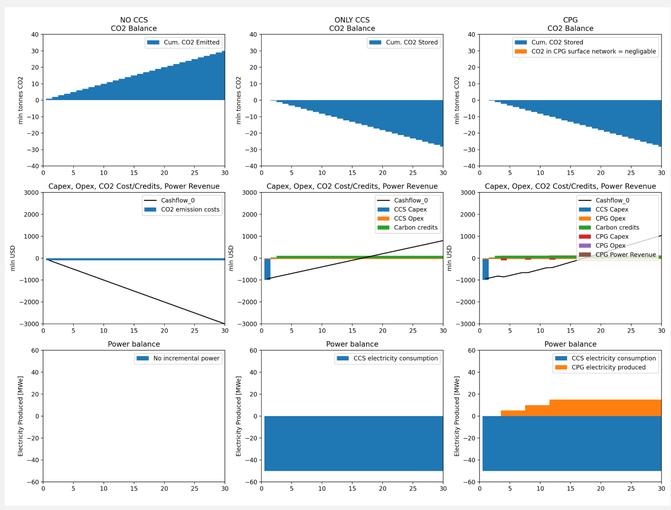


CCS + CPG

Surface-subsurface coupled model + econ model



Simulation results illustration



5 Conclusion

TANGO, an integrated techno-economic modelling tool for various geo-energy systems has been developed.

Successful applications to geothermal systems, CCS, and CPG.

Future work: 1) Support more geo-energy systems (e.g., hydrogen, ATES, etc.), 2) Web-application

References

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