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# Coupling reaction transport model and multiphase hydrate simulator for studying anaerobic oxidation of methane

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The anaerobic oxidation of methane (AOM) occurring in the surface sediments acts as an important barrier to methane emissions, caused by the reaction between sulphate ions and dissolved methane molecules. However, the current hydrate simulators rarely consider the transport of sulphate and the subsequent AOM reaction. In this study, to investigate AOM effects in hydrate systems, a new simulator named Tough+Hydrate+AOM (THA) is developed by combining the reaction transport model with the widely-used Tough+Hydrate simulator. The THA simulator is validated using the single-phase cases of the Dvurechenskii mud volcano in Black Sea, since the results obtained are in good agreement with previous ones. The THA simulator considering AOM is expected to be an important tool for assessing methane emissions caused by hydrate destabilization.

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## References

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**Primary author:** LIU, Haotian

**Presenter:** LIU, Haotian

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