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Submarine Oil Seep Study

Southern Santa Maria Basin and Western Santa Barbara Channel

Jointly funded by: MMS, USGS, County of Santa Barbara



Oil seeps naturally all along the coast of California, notably in the Santa Barbara Channel near Coal Oil Point. The widespread nature of oil seeps historically is documented by early explorers and by coast-dwelling Chumash Indians.

Scientists want to know where the seeps are, especially in the less studied areas like the Southern Santa Maria Basin. We also want to know whether we can tell the difference between oil found seeping naturally from the ocean floor and oil being produced from offshore platforms. Since both the seeping oil and the oil production mostly come from the same Monterey formation, up to now, chemists haven't been able to reliably tell them apart. But this study may let us do that.

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Submarine Oil Seep Study

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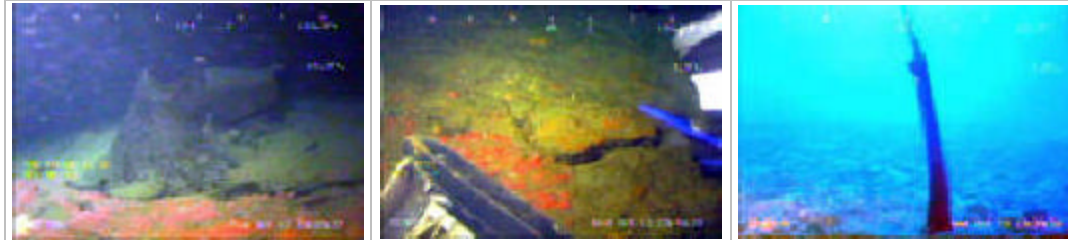
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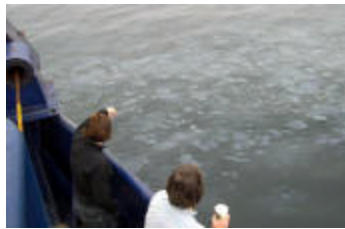
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Our Most Recent Cruise

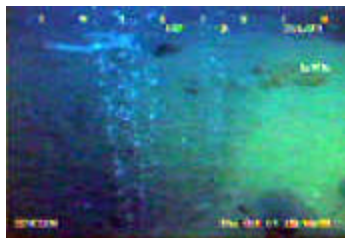
In October, numerous natural seeps were sampled on the ocean floor off Point Conception, off Gaviota and near Coal Oil Point.



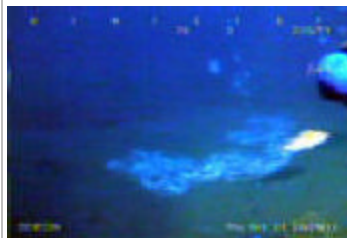
Tar seeps found in 100-200 feet of water offshore Point Conception exhibit heavy oil and little gas. Benthic communities common on rocky reefs colonize older portions of the tar.



Tar seeps visible from the surface at Gaviota come from seeps that resemble flat patties on a predominately sandy ocean floor.



Tar seeps in the Coal Oil Point area near the underwater seep tents are characterized by gas bubbles and a white, sulfur-eating bacteria called *Beggiatoia*.



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Sampling Seeps for Fingerprinting

Tar “whips” on the ocean floor (right) break off and float to the surface. USGS scientists successfully recovered a few for fingerprinting from the water’s surface. (Some photos below are screen captures from live underwater video, hence the image quality is not always consistent.)

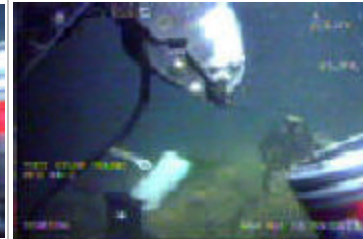
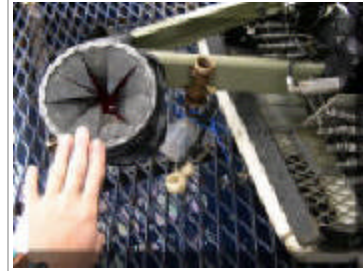


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Sampling with an ROV



Samples are also recovered using the ROV's (remotely operated vehicle) mechanical arm and are brought to the surface for analysis.



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For more information, contact: [Mary Elaine Dunaway](#)

Pagemaster: [Nollie Gildow-Owens](#)

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