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WTI & WCS Houston delivered to China:
Pricing US crude vs global competitors in Asia

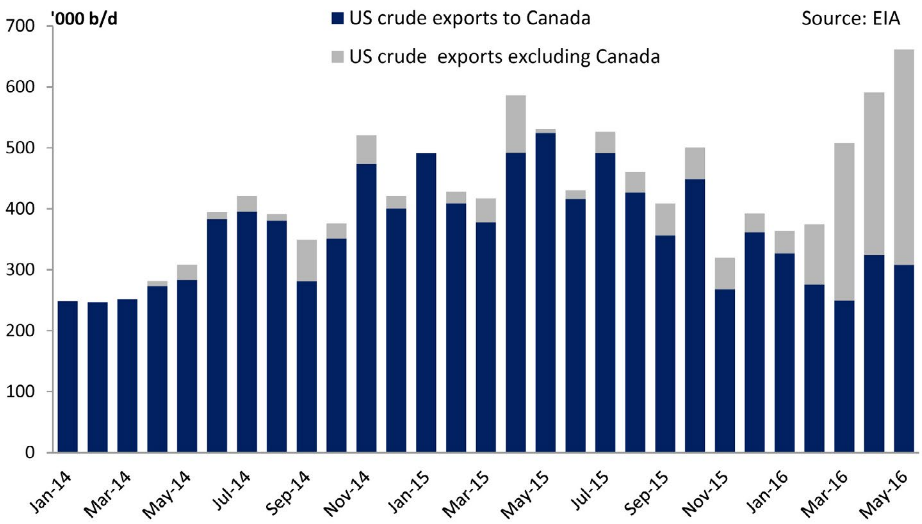
As the leader in North American crude pricing, Argus is pioneering the publication of delivered prices of US and Canadian crude loaded in the Gulf of Mexico — the WTI Houston and WCS Houston markers — to Asian destinations including China, the world's top oil importer.

US crude exports to countries other than Canada soared to more than 350,000 b/d in May 2016, less than six months after the export ban was lifted and amid a major downturn in global oil prices that has kept WTI Houston crude mostly below $50/bl. Including shipments to Canada, US exports have doubled in the past two years to almost 700,000 b/d (see chart). Refiners from around the world are increasingly looking to raise crude purchases from this emerging and reliable supplier, while rival producers from different regions are focusing their efforts to remain competitive against rising US exports. And that battle for market share is fiercest in the growing Asian market, where price comparisons are most relevant after taking into account export and freight costs from multiple origins.

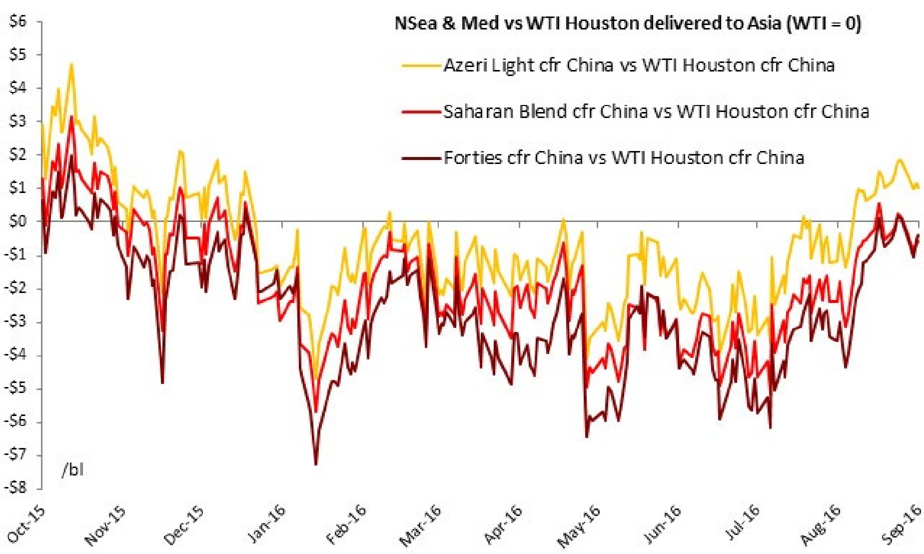
China and Japan are now regular importers of US crude with occasional purchases coming from South Korea, India and Singapore. Volumes and destinations are on course to continue multiplying as the arbitrage economics of US light sweet West Texas Intermediate (WTI) crude compete with rival west African, Mediterranean, Caspian, North Sea and Asia-Pacific grades delivered to northeast Asian ports (see chart), while heavy sour Western Canadian Select (WCS) re-exported from US Gulf coast terminals has the potential to reach India and beyond. The expansion and development of export capacity in the US Gulf coast, especially next year's completion of infrastructure linked to the Magellan East Houston terminal (MEH) where WTI Houston is priced, is set to accelerate these flows. As an import and export hub, the US Gulf coast (USGC) is now the most important region for crude price discovery and Argus assessments such as WTI Houston and WCS Houston represent the key pricing signals at the world's primary balancing point, linking non-conventional US shale and Canadian oil sands production to the international seaborne crude market.

Methodology: Argus takes the daily volume-weighted average (VWA) of all deals done during the entire trading day for WTI Houston and WCS Houston, adds export terminal costs and the daily freight rate for the USGC-to-China route for Suezmax (130,000t) cargoes and publishes the delivered price of these two grades in the Asia-Pacific section of the Argus Crude report. The VWA for for

US crude exports



Forties & WTI Houston can break even delivered to China



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WTI Houston is at a differential to WTI Cushing, and the average differential is then applied to the Argus Formula Basis WTI price to arrive at a fixed price, reflecting the standard approach for other USGC grades.

Spot trade for WTI crude at Houston, Texas, has grown rapidly, reflecting both steady production from the Permian basin in west Texas as well as expanded pipeline capacity delivering WTI to Houston. The Argus VWA for WTI at Houston is the most transparent indicator of value for the light grade at the USGC. The market is underpinned by infrastructure suitable for spot trade, segregated storage and a freely tradeable spot market. WTI Houston is also backed by robust field production that creates both the surplus volumes needed for a spot market to work properly and the confidence that supply will be available for years to come. Both CME and ICE now list several futures contracts for WTI Houston, all of which are settled on the Argus price assessment for the grade.

The consistent quality of WCS and the growing ability to store and trade it in the Houston area establish WCS at Houston as a valuable proxy for overall heavy crude value. WCS in the Houston area is largely delivered by pipeline on the same timing as other US Gulf pipeline grades, and it typically trades at a differential to the calendar month average of CME's light sweet crude contract. WCS is backed by robust Canadian oil sands projects which continue to raise output, even in the face of lower crude prices.

The USGC also provides price discovery for medium grades, including benchmarks such as Mars and ASCI (Argus Sour Crude Index), used by major Middle Eastern and some Latin American crude producers for exports to North America (see chart below). The array of light sweet and heavy sour price discovery at one location offers a strong alternative to the North Sea and Mideast Gulf markets, while the US also offers deep reserves, transparent and actively traded physical markets, sensible regulation and extensive infrastructure. By the end of this decade, we may well see pricing across the Atlantic basin and beyond looking to the USGC for its primary physical and financial benchmarks for a wide array of crude grades. A price for WTI Houston and WCS Houston delivered to Asia is just the beginning.

Array of Argus US Gulf coast markers