



# UPDATE ON United States–South America Ocean Grain Freight Spreads (Summary)

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This paper is an update of the summary of: U.S.–South America Ocean Grain Freight Spreads, by Jay O’Neil, International Grains Program Institute (IGP), Kansas State University (KSU). The full paper is available at <http://hdl.handle.net/2097/18876>. For more information on this summary, contact the author at [Delmy.Salin@ams.usda.gov](mailto:Delmy.Salin@ams.usda.gov) or 202-720-0833.

The world export market for soybeans is highly competitive. Even though U.S. production costs are higher, total costs, including transportation costs, from point of production to the destination in Asia are generally lower than for South American soybeans, allowing U.S. soybeans to compete. However, developments in Brazil are lowering its transportation costs, making it more competitive in the world market.

In 2014, Brazil created a new export route from Miritituba to Barcarena (Vila do Conde), adding a new northern gateway to grain exports from North Mato Grosso (MT) to China, Europe, the Middle East, and Mexico. By December 2018, the 56 miles (90 km) of pavement along highway BR-163 connecting Sorriso, North MT, to Miritituba is expected to be finished. According to industry analysts, transportation costs will be reduced by about US\$10/metric ton (mt) (R\$30/mt) when BR-163 is finished. In addition, Brazilian seasonal port backlogs declined significantly because of the added loading capacity in the Northern Arc ports, and increased vessel loading efficiencies in the Southern ports, which expedited exports. The added capacity in the Northern Arc ports helped relieve congestion in the busy Southern ports by shifting cargo away to the Northern Arc ports, especially to Barcarena and São Luís. The Port of Santos is still the largest Brazilian grain export gateway.

This report found that during the 2017 peak harvest season, Brazil and the U.S. Gulf loading delays and vessel backups were similar, averaging 12-18 days, narrowing the time spread between the regions. Consequently, relatively small differences in seaborne transportation costs can make South America soybean exports more competitive than those of the United States, diverting trade from the United States to Brazil or Argentina, or the reverse. Ocean freight spread is the cost difference between two vessel routes to the same destination, such as the U.S. Gulf and the Pacific Northwest (PNW) versus South America to Asia (China and Japan), or the U.S. Gulf versus South America to Europe and China.<sup>1</sup>

<sup>1</sup> The U.S.–South American ocean freight spread competitiveness occurs in the Atlantic route (U.S. Gulf) to China and not in the U.S. Pacific Northwest (PNW) because of the Panama Canal and the Canal transit costs limitations.

## Vessel costs from U.S. Gulf versus Argentina and Brazil to Shanghai, November–December 2017

Cargo mean quantity	U.S. Gulf			Argentina	Argentina	Brazil		
				Rosario	Bahia Blanca	Santos	São Luís/Itaqui	
	62,000 mt <sup>1</sup>	66,000 mt	66,000 mt	55,000 mt	60,000 mt	66,000 mt	65,000 mt	
Panamax	Post-Panamax	Post-Panamax	No Top-Off <sup>2</sup>	2 Port With Top-Off				
Route via	Panama Canal	Panama Canal	Cape of Good Hope	Cape Horn	Cape Horn	Cape of Good Hope	Panama Canal	Cape of Good Hope
Nautical miles	10,013	10,013*	14,973	11,450	10,870	11,056	11,087	11,708
Voyage days (at 12 knots)	35	52	52	40	38	39	39	41
Panama Canal wait time	2	0	0	0	0	0	2	0
Laytime both ends	18	18	18	22	26	21	21	21
Total voyage duration days	55	70	70	62	75	60	62	62
Vessel operating costs	\$2,271,250	\$2,522,500	\$2,522,500	\$2,078,000	\$2,260,000	\$2,033,000	\$2,061,000	\$2,061,000
Port Fees	\$269,775	\$284,925	\$284,925	\$265,000	\$439,000	\$40,400	\$75,175	\$75,175
Panama Canal Fees (one way)	\$220,000	\$220,000					\$220,000	
Total costs	\$2,761,025	\$3,027,425	\$2,807,425	\$2,078,000	\$2,260,000	\$2,033,000	\$2,356,175	\$2,136,175
<b>Freight rate:</b>	<b>\$42.48</b>	<b>\$45.87</b>	<b>\$42.54</b>	<b>\$37.78</b>	<b>\$37.67</b>	<b>\$30.80</b>	<b>\$36.25</b>	<b>\$32.86</b>

<sup>1</sup>Metric tons

<sup>2</sup>No top-off: the port of Rosario channel draft is not deep enough to load full Panamax and Post-Panamax vessels. Sellers have to decide to load up to 55,000 mt of cargo at Rosario (No top-off); or 2 port with top-off: to load 45-50,000 mt at Rosario and finish loading (top-off) an additional 10-15,000 mt at Bahia Blanca

\* UPDATE 6-27-18: There was a mistake in the table data when this document was originally posted. The Nautical Miles row, Panama Canal column has been corrected to show nautical miles are 10,013.

Source: O'Neil Commodity Consulting

Market conditions at any time may change the estimated route voyage cost. The estimated vessel freight trade can be above or below these straight cost calculations. Consequently, the market will trade at whatever price level it deems appropriate. Seasonal port backlogs impact the logistical flow of commodities and shipper costs, but in a supply push market (markets where supply is abundant), these extra costs generally get passed back to the local producers rather than the shipper or commodity buyer and therefore have a smaller effect on ocean freight rate spreads. This is true whether commodities are sold free on board<sup>2</sup> (FOB) or cost and freight<sup>3</sup> (CNF).

The ocean freight rates for grain cargos from South America to Asia are often less expensive than from the U.S. Gulf because of dry-bulk vessel route patterns, lower cost port charges, higher Panama Canal tolls, and less burdensome navigation restrictions. South America shipments provide some natural competitive advantages for Brazilian and Argentinean grains and oilseeds by sailing around Cape of Good Hope and avoiding the Panama Canal when the need exists. South American shippers can load vessels too large to fit through the Canal, gaining economies of scale and avoiding Canal fees and delays. Brazilian ports also provide less expensive berthing (dockage) costs for vessels. However, recently, Post-Panamax<sup>4</sup> soybean vessels from the U.S. Gulf to China are going around the Cape of Good Hope and bypassing the Panama Canal to avoid fees and waiting times. The Panama Canal does not allow Dry-Bulk vessels to pre-schedule lock times going through, as it does for the Container, Auto, and Liquefied Natural Gas (LNG) vessels. Grain vessels must wait for an opening if they wish to go through the new locks.

Currently, loading delays and vessel backups in South America are similar to those in the United States. The cost of any resulting vessel demurrage, however, does have a significant impact on the value of the FOB cargo and the price received by South American producers. For example, “FOB Santos” shows that the Brazilian seller will pay for transporting the grain to the Port of Santos and the cost of loading the grain onto the ship, including inland haulage, customs clearance, origin documentation charges, and demurrage. Once all the grain is on board, the buyer pays for all costs beyond that point. There is no readily available public data identifying the ocean freight spreads between the United States and South America. This study is based on primary data from O’Neil Commodity Consulting. Secondary data sources are USDA-AMS Transportation Services Division, Bluewater Shipping Port statistics, and the Panama Canal Authority. The study does not include inland transportation costs in each competing region.

### **Preferred citation:**

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2 FOB Origin indicates that the sale is considered complete at the seller’s shipping dock, and thus the buyer is responsible for freight costs/liability.

3 CNF refers to a common type of shipping agreement where the seller pays for delivering the item to the port closest to the buyer. CNF shipping terms does not include the cost of cargo insurance.

4 Post-Panamax are vessels with a capacity of 80,000 to –110,000 dwt; Panamax vessels have a capacity of 60,000 to 80,000 dwt. Deadweight carrying capacity (dwt) is the weight that a cargo ship is able to carry when immersed to the appropriate load line, expressed in tons, including total weight of cargo, fuel, fresh water, stores, and crew.