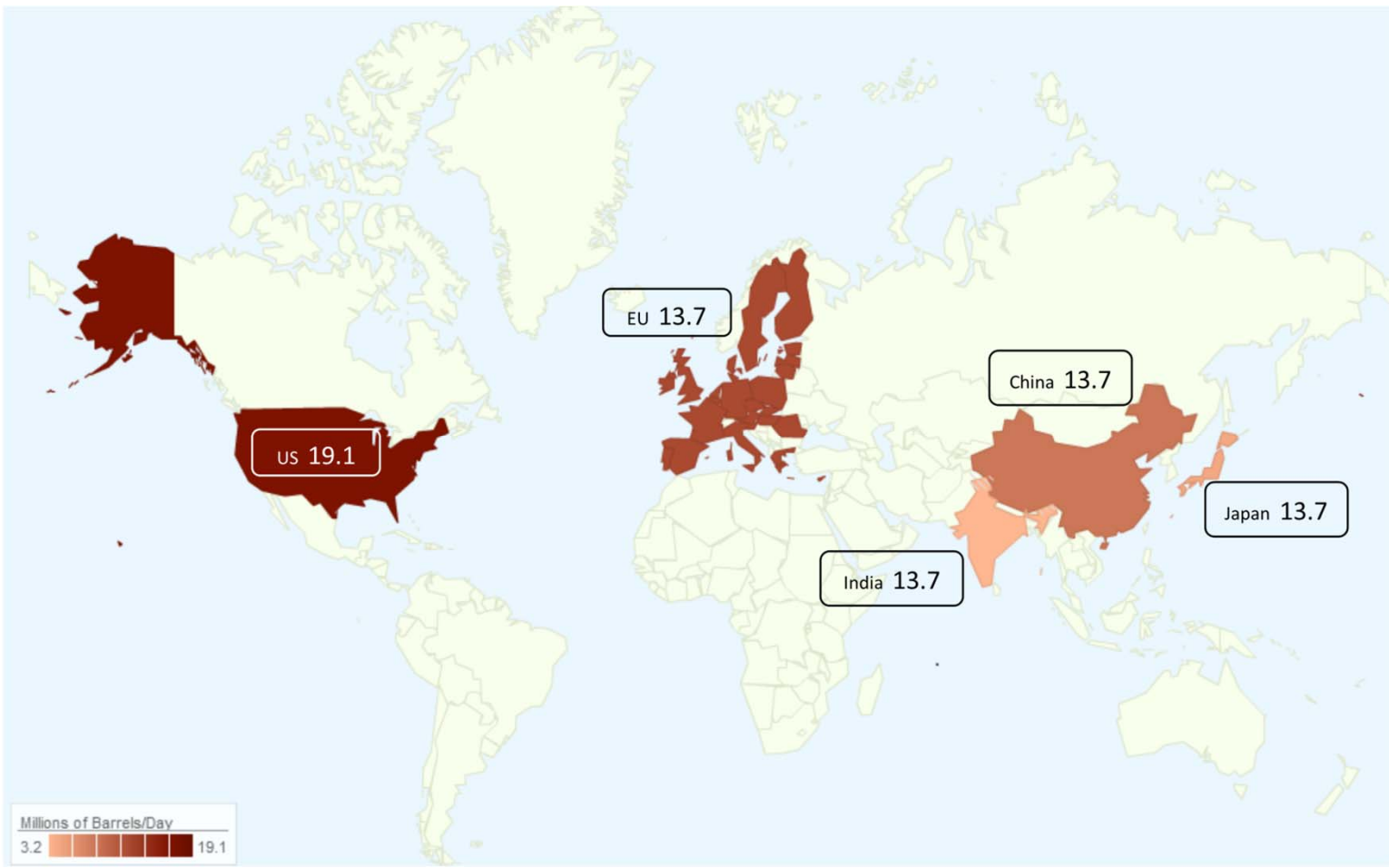
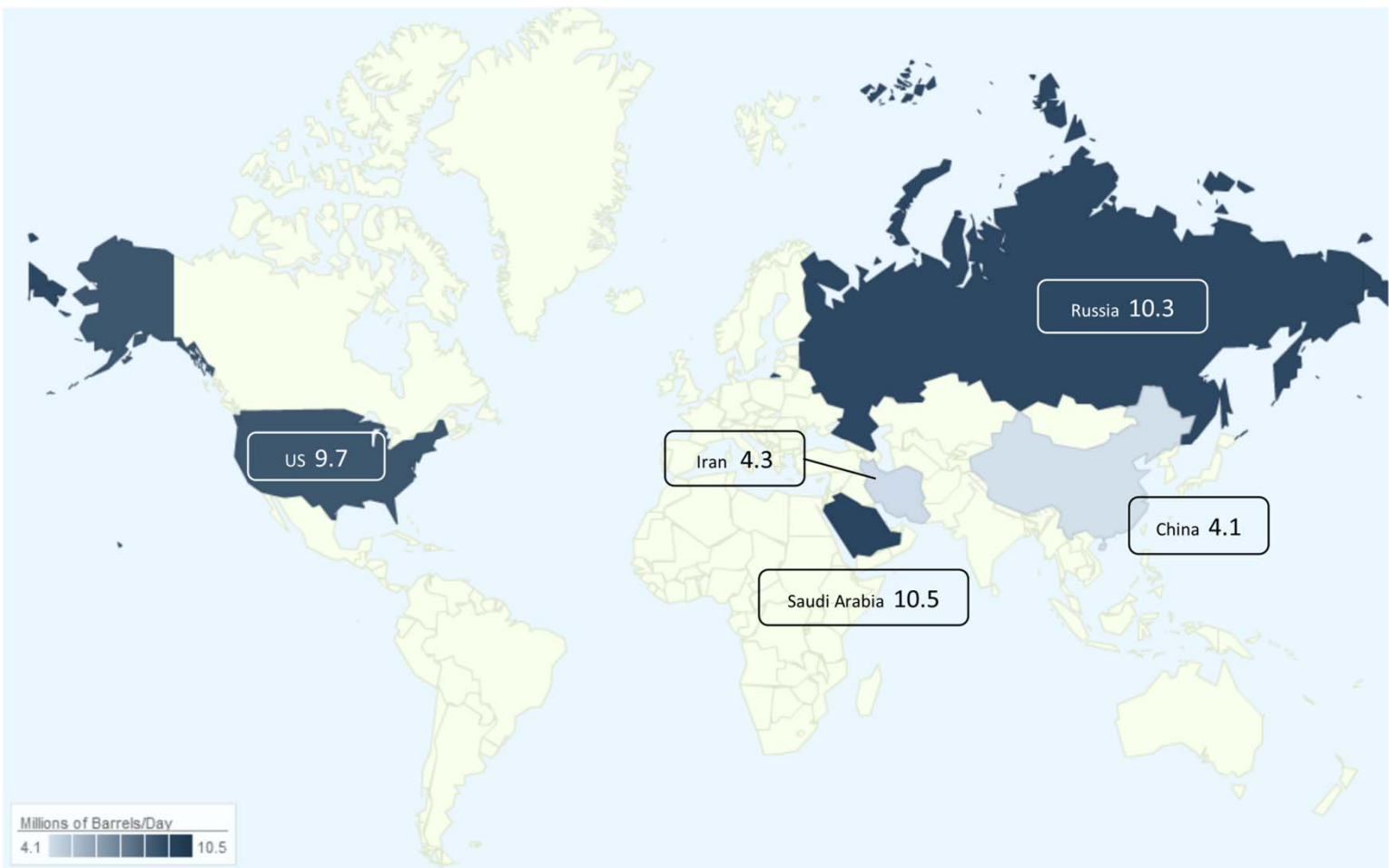


Petroleum Cyber Conflict: An Open Source Analysis of Entities' Means, Motive, and Opportunity for Industry Manipulation

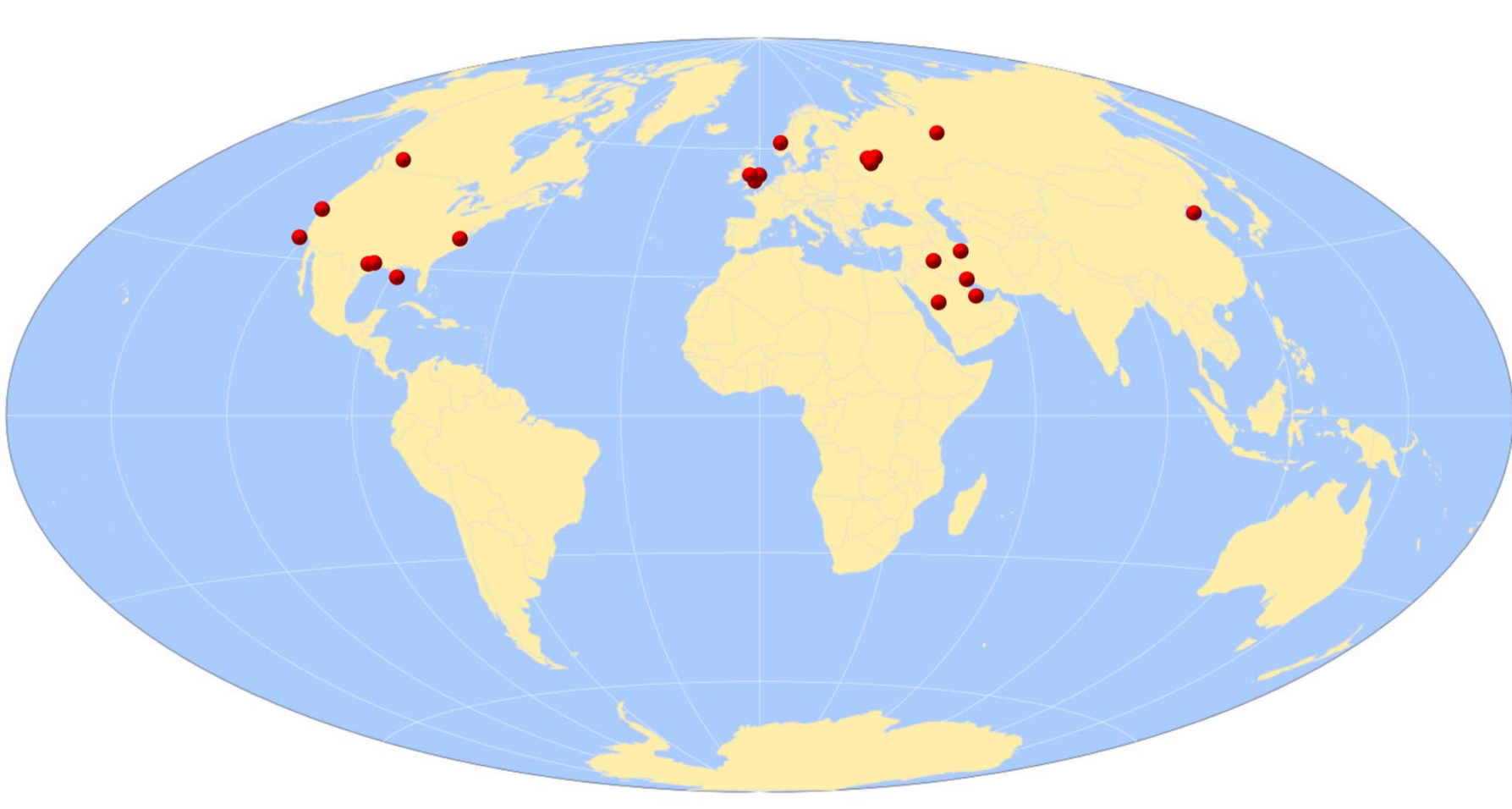
Kristine Arthur, William Ellis, Mary Horner, Tyler Jensen, Kyle Johansen, Jacob Kambic, Eric Katz, Bryan Lee, Marcus Thompson, Samuel Liles



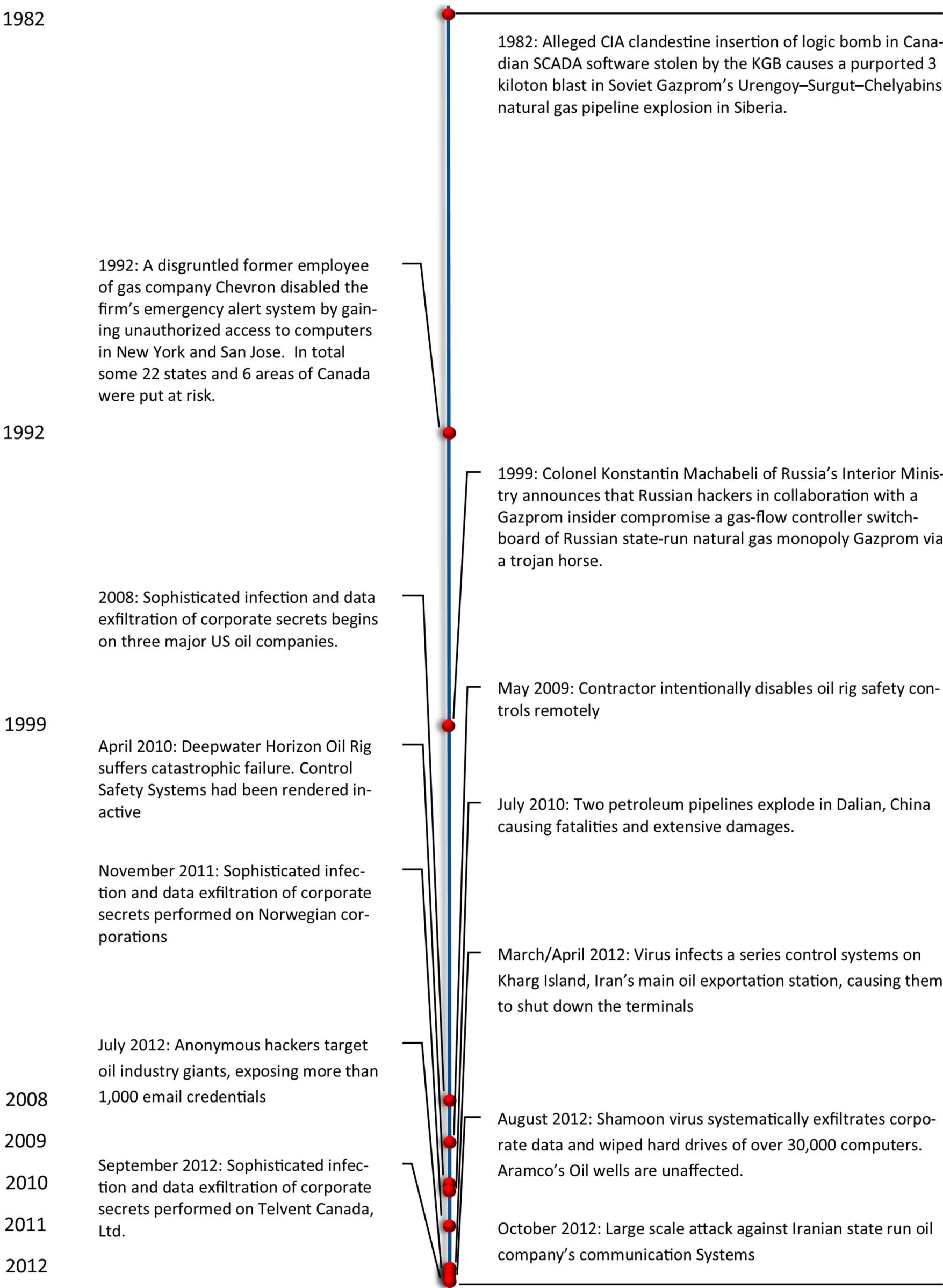
Oil Consumption



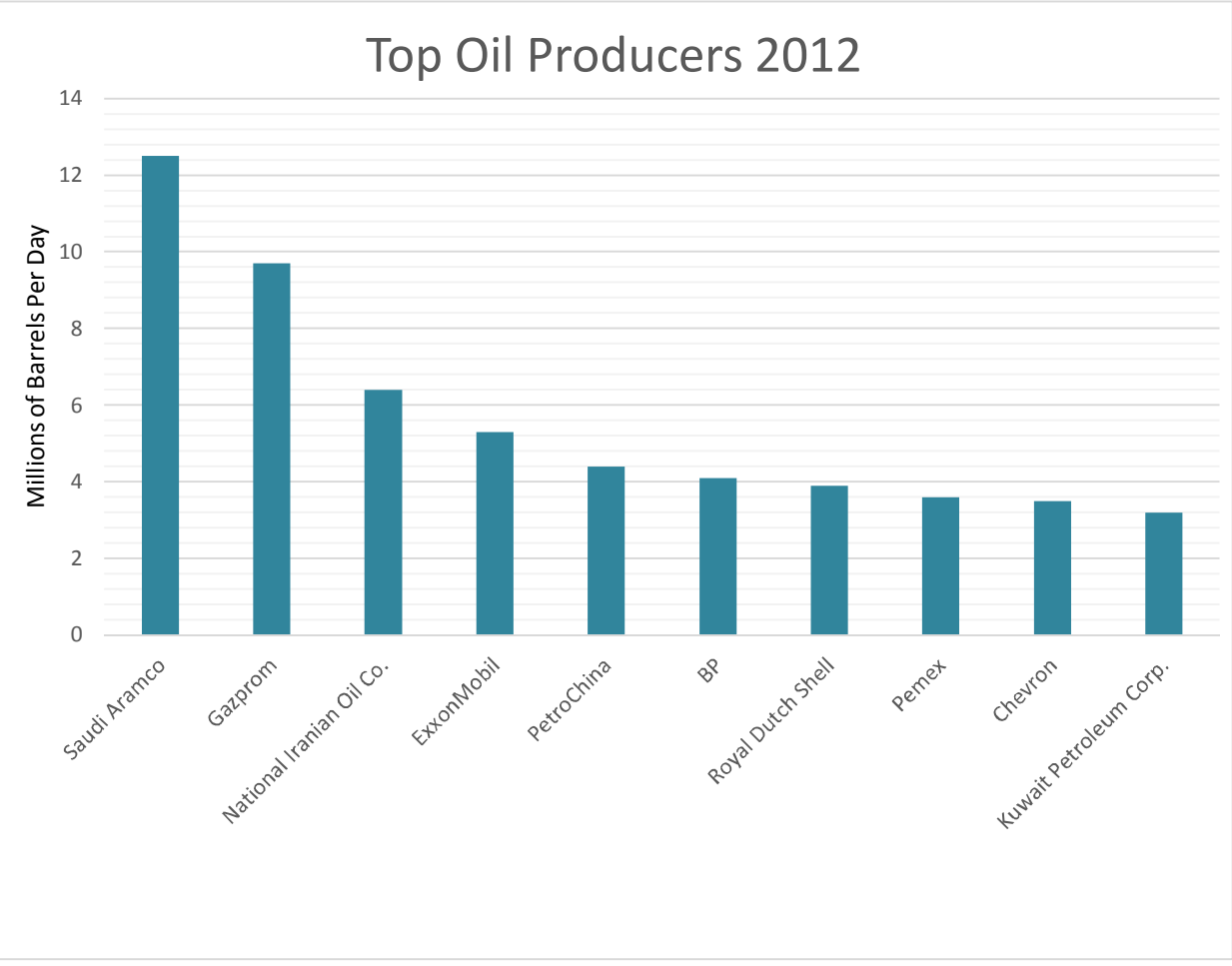
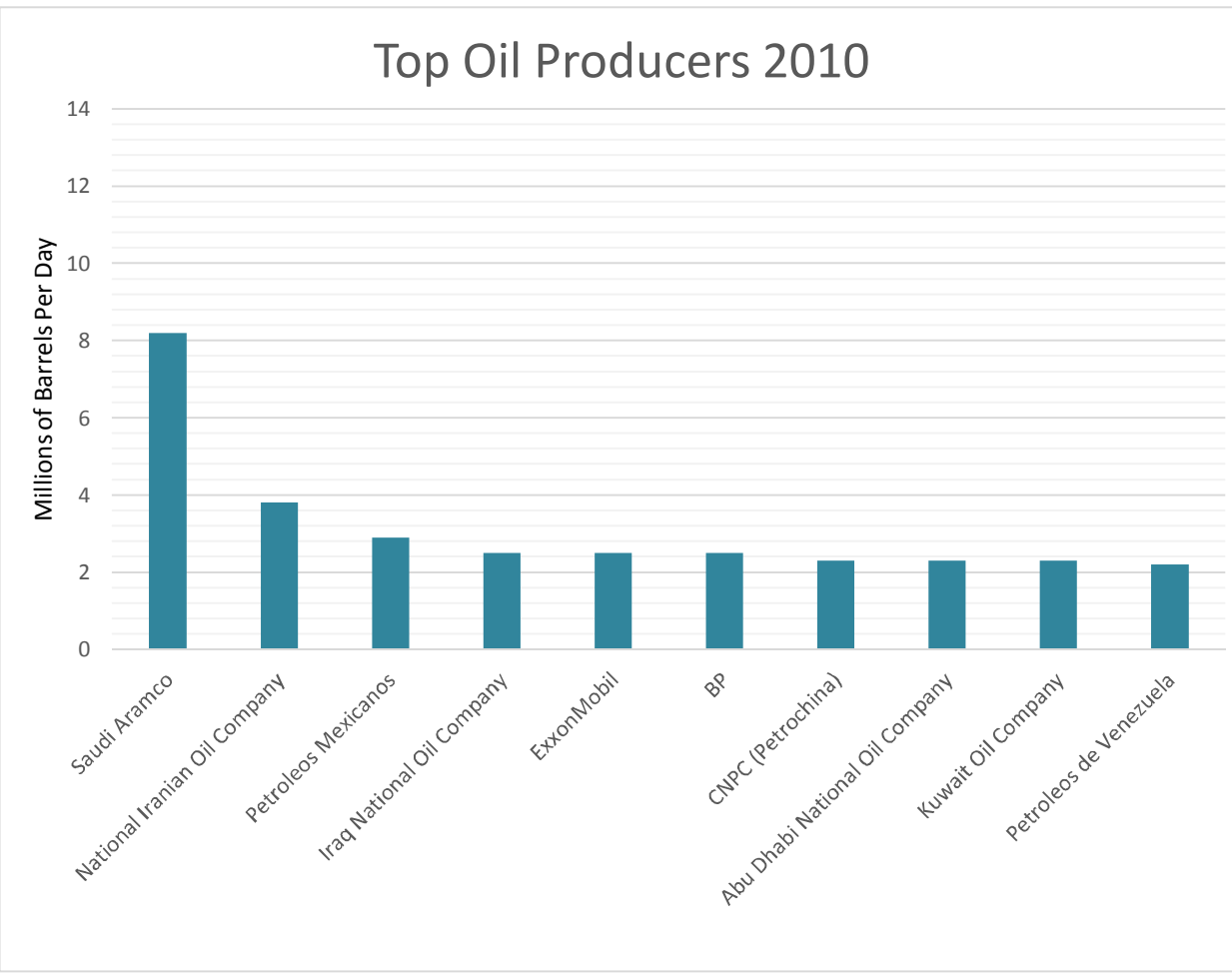
Oil Production



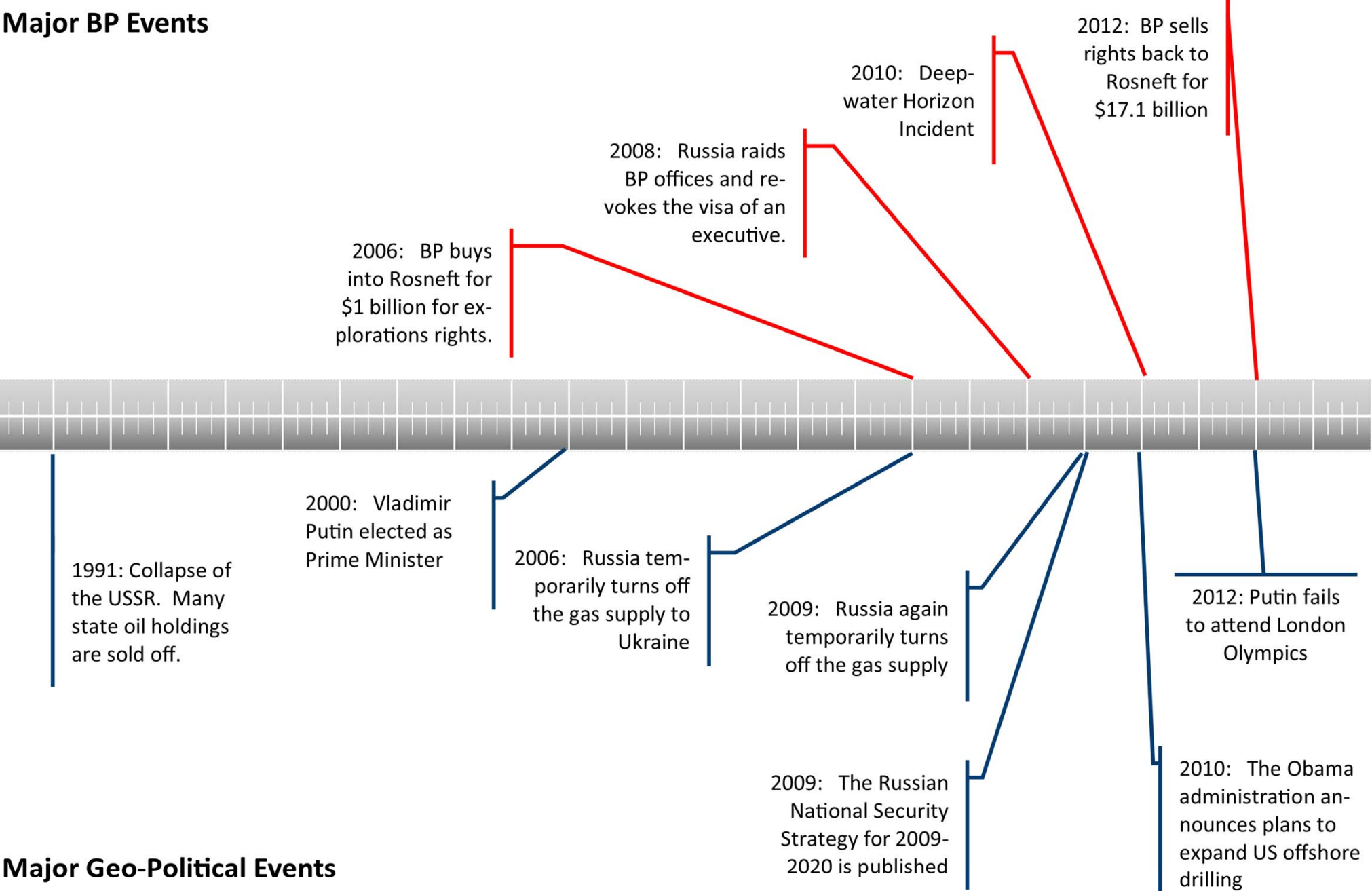
Location of Observed Incidents



	1998	Exxon acquires Mobil
	2001	September 11
Department of Homeland Security created	2002	Oil tanker Prestige sunk off northwest coast of Spain
Strike in Venezuela shuts down oil production	2002	Euro is official
SARS	2003	Talisman sells Sudan holdings
China and US DPRK and nuclear non-proliferation	2003	BP purchases 50% of TNK (4th largest Russian oil company)
CEO of Russia's largest oil company arrested	2003	Iraq invasion
China State Oil offers to buy Unocal Corp. for \$18.5 billion (offer withdrawn)	2004	Explosion at BP's Texaco City refinery
Conoco Phillips and Burlington Resources merge	2004	Chevron-Texaco offers to buy Unocal Corp for \$16.4 billion
Kyoto Protocols	2005	Chevron buys Unocal Corp
NORK nuclear weapons test	2005	1770 km BTC pipeline opens (2nd longest)
US reports 1 trillion barrels of oil in shale	2006	Russia exerts nationalistic pressure
World Trade talks breakdown	2006	Gazprom buys half of Sakhalin2 project from Shell
Venezuela nationalizes oil industry by taking over oilfields run by 6 private companies	2007	Russia turns off flow of oil through Belarus
Saudi supertanker hijacked	2008	Housing bubble bursts
Russia and Venezuela invest \$20 billion in Junin 6 field	2008	Venezuela deal with China National Petroleum Corp to export more oil to China
ApacheCorp buys BP assets for \$7 billion	2009	BP and Conoco Team up to develop Alaskan pipeline
CNOOC acquires Eagle Ford Shale for \$2.2 billion	2009	ExxonMobil buys XTO
Chevron buys Atlas Energy	2010	Deepwater Horizon
Husky Energy Inc authorizes CNOOC to drill off shore of Hong Kong	2010	Russia and Norway sign agreement over Barent Sea
Sinopec invests \$2.2 billion in 5 plays owned by Devon Energy	2010	EOG blowout in Pennsylvania
Exxon-Mobil signs deal with Rosneft and gains access to offshore Russian holdings	2011	BP signs deal with Rosneft to explore for oil and gas in South Kar Sea
	2011	BP and Conoco withdraw Denali Pipeline application
	2012	ConocoPhillips announces split

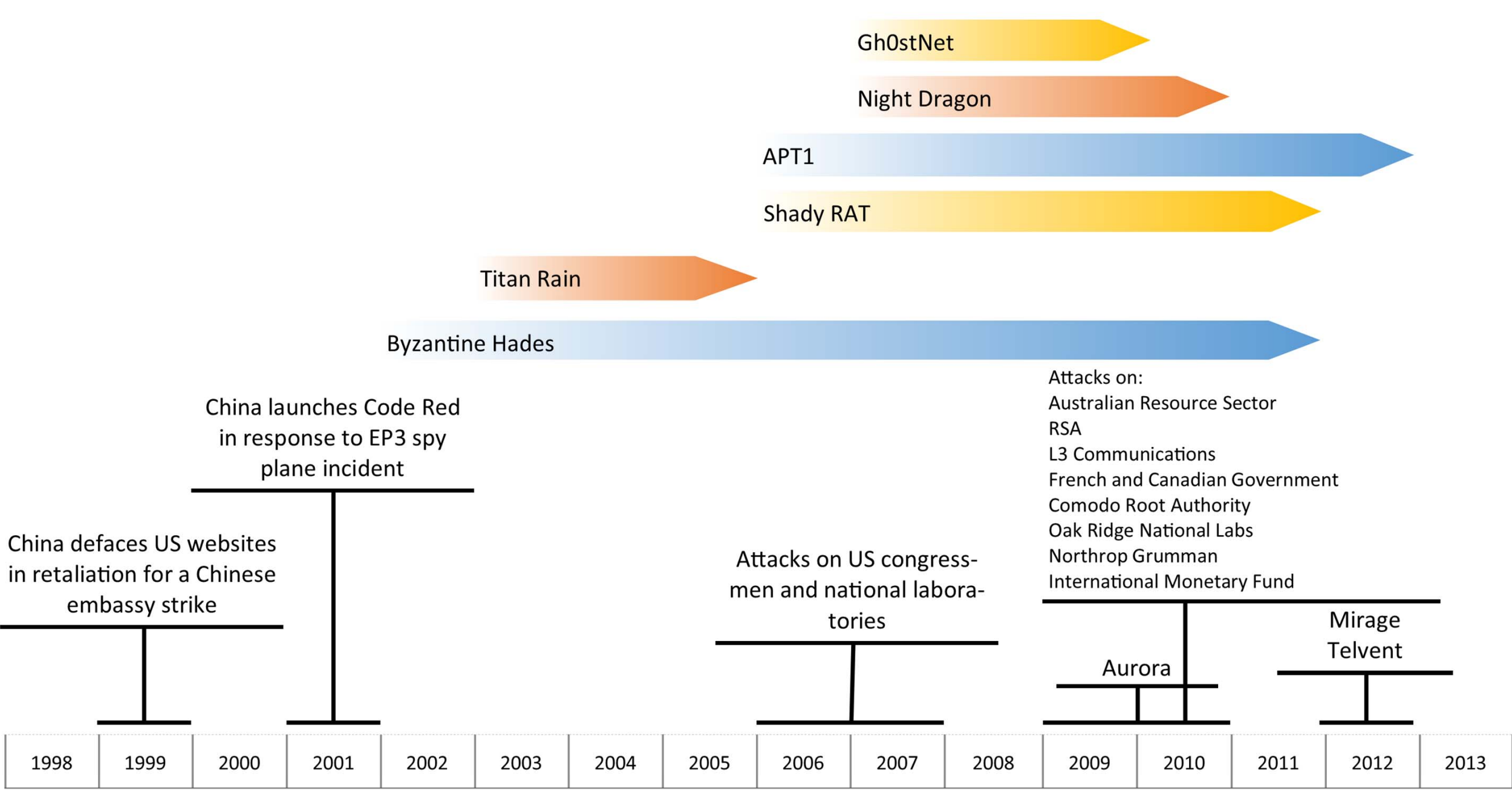


Major BP Events



Major Geo-Political Events

Russian Incidents



Chinese Cyber Incidents