Data Integration Assignment

Data Source	NOAA Tides and Currents
	● [Water Levels](#)
	● [Astronomical Data](#)
	Time and Date
	● [Moon Phases](#)
Lesson Enhancement	In the 8th grade we talk about the Earth, Moon and Sun System in relationship to gravitational forces. When we talk about the moon, I like to use databases that show the real data of the different phases of the moon. Students can look up different stations across NY state or across the US and find real data on moon phases. They can do the same for water levels. Instead of only showing an animation of the moon phases and the tides, students are able to collect real data and make inferences about the data as well as to come up with patterns in the data. When students can relate to the concepts at a personal level, it makes the information come to life and it allows the student to make a personal connection to the concepts learned, which makes the learning authentic. The teaching/learning of moon phases goes beyond a diagram or the memorization of phase names. Using data allows for students to be able to create meaning for themselves, which makes the learning process unique and meaningful. Other concepts can be addressed, like lunar and eclipses, as well as motions (rotation, revolution) and other cyclical patterns observed on Earth. Concepts related to coastal erosion can be incorporated as well by looking at historical data of tides.
	Personally, I find using data in the classroom provides an great opportunity for students to engage in science practices. It allows for students to ask questions, identify patterns and use evidence to draw conclusions. I would prefer students to be able to collect their own data, but when this becomes difficult or impossible to do, secondary reliable sources are a great resource to use in the classroom. Some databases are overwhelming to use, so to minimize the time wasted, I would download and organize the data for students to use or I would provide a step-by-step procedure (video or model) for students to follow.
Interdisciplinary Context	The data sources were used specifically to address the part of the science standard in middle school ESS1-1, which reads: "Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.: It clear addresses the patterns in lunar phases and tides, however, it could also address multidisciplinary concepts. For example, students can use geometry to describe the position of the moon in relationship to the Earth and the Sun to describe moon phases. Students can also use ratios to describe the illuminated parts of the moon to describe the phases. Students can use raw data to make graphs and provide a more in-depth analysis of the data. Students can use sheets, excel or grapher to make graphs. Students can create models of patterns (moon, tides) using educational apps or any tools/materials they can find that can make the

	model realistic and instructional. They can also write a story that explains the phenomena of moon phases and/or tides. Students can create easy-to-use and affordable sensors with coding apps/gadgets like microbit and microsoft makecode. Students can also use chibitronics create a model of the phases by using circuit stickers. All of these examples can be integrated into the same unit of study and can provide students options on how they want to show their level of understanding.