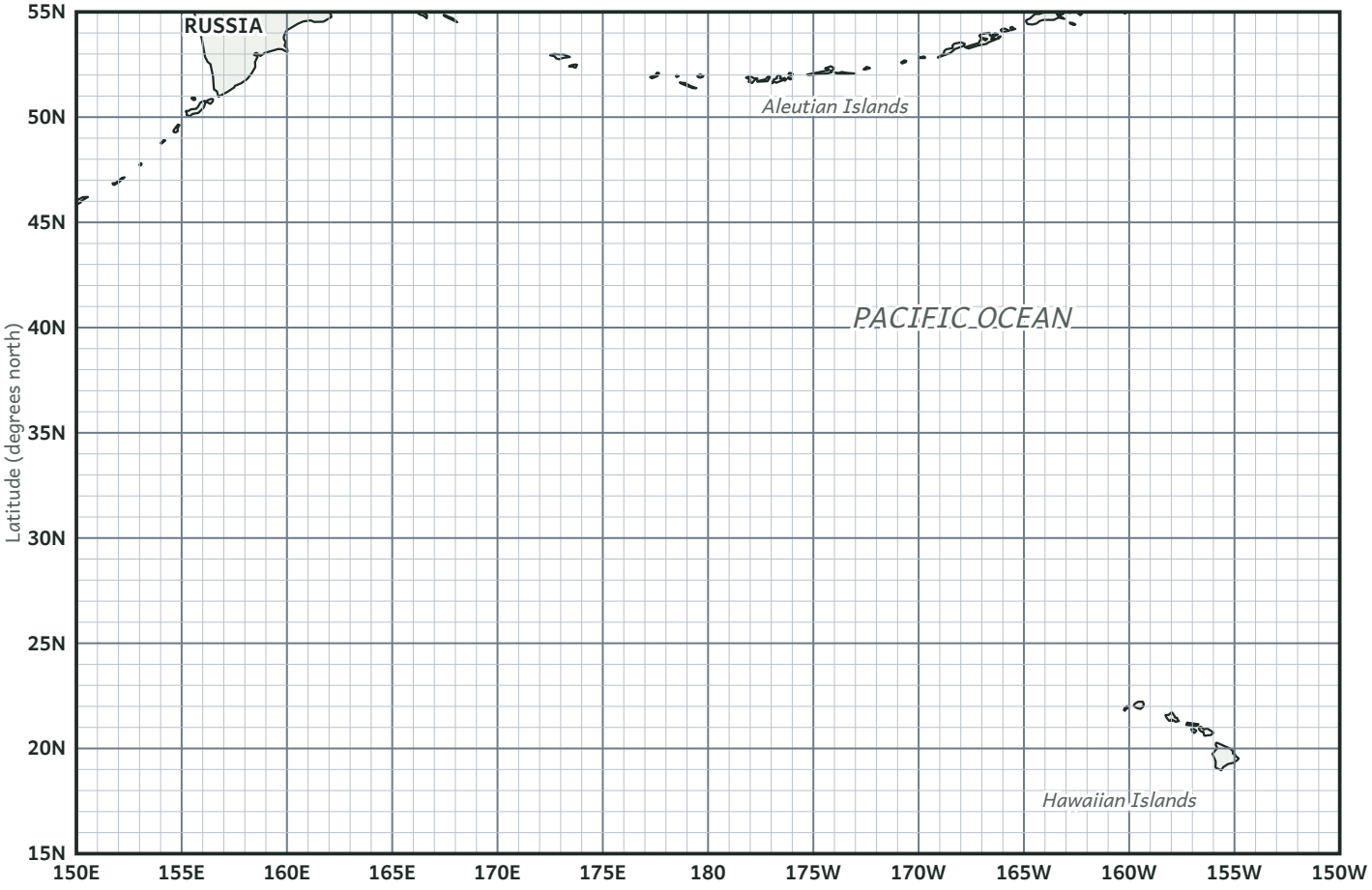
Latitude and longitude · Earth science map

Track the Hawaiian Hot Spot

Name _____

1. Each row is a volcano in the Hawaiian chain, with its age. Most are now islands. The seamounts are under the sea. Find each one's latitude and longitude, draw a dot, and write the row number. Watch the letters: this map crosses the 180° line, so the longitude goes from W to E. **2.** Join the dots in order.



	Volcano	Age	Lat.	Long.
1	Kilauea (Island of Hawaii)	erupting now	19° N	155° W
2	Maui	1.3 million yrs	21° N	157° W
3	Oahu	3.7 million yrs	22° N	158° W
4	Kauai	5.1 million yrs	22° N	159° W
5	Nihoa	7.2 million yrs	23° N	162° W
6	Necker	10.3 million yrs	24° N	165° W
7	French Frigate Shoals	12 million yrs	24° N	166° W
8	Laysan	19.9 million yrs	26° N	172° W

	Volcano	Age	Lat.	Long.
9	Pearl and Hermes	20.6 million yrs	28° N	176° W
10	Midway	27.7 million yrs	28° N	177° W
11	Daikakuji (seamount)	47 million yrs	32° N	172° E
12	Koko (seamount)	48 million yrs	35° N	172° E
13	Nintoku (seamount)	56 million yrs	41° N	171° E
14	Suiko (seamount)	65 million yrs	45° N	170° E
15	Detroit (seamount)	81 million yrs	52° N	168° E

3. Your line bends. Which volcano sits at the bend? _____

4. Which end of the chain is the oldest? _____

5. A hot spot under the sea stays in one place and makes a new volcano. The plate on top slides along and carries the old ones away. From the ages, which way is the plate moving? _____

6. Before the bend, which way was the plate moving? _____

Bonus. Kauai is about 500 km from Kilauea and 5.1 million years old. About how many km did the plate move in each million years? _____

Positions: the Hawaiian-Emperor chain, rounded to the whole degree. Ages: University of Hawaii (SOEST) potassium-argon ages; Daikakuji: Sharp and Clague (2006); Detroit: Keller et al. (1995).

Latitude and longitude · Earth science map · Answer key

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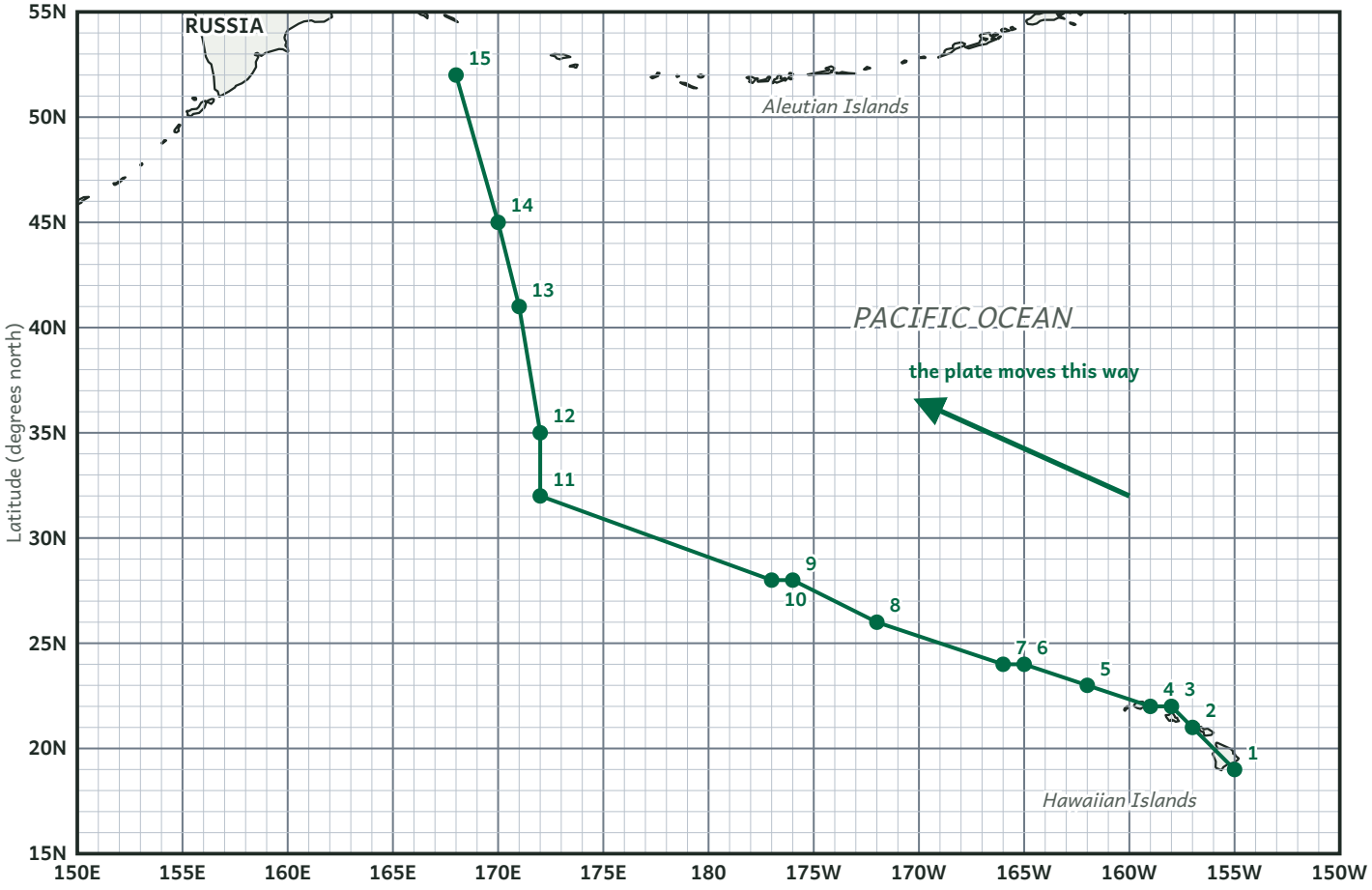
1. Each row is a volcano in the Hawaiian chain, with its age. Most are now islands. The seamounts are under the sea. Find each one's latitude and longitude, draw a dot, and write the row number. Watch the letters: this map crosses the 180° line, so the longitude goes from W to E. **2.** Join the dots in order.



Longitude: E is east of the 180° line, W is west of it

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3. Your line bends. Which volcano sits at the bend? **Daikakuji**

4. Which end of the chain is the oldest? **The north end (Detroit)**

5. A hot spot under the sea stays in one place and makes a new volcano. The plate on top slides along and carries the old ones away. From the ages, which way is the plate moving? **Northwest (away from the Island of Hawaii)**

6. Before the bend, which way was the plate moving? **North**

Bonus. Kauai is about 500 km from Kilauea and 5.1 million years old. About how many km did the plate move in each million years? **About 100 km (10 cm a year)**

The Island of Hawaii is over the hot spot today, so it is still erupting. Each older volcano was carried off to the northwest, went quiet and slowly wore down into a seamount. The bend, about 47 million years old, shows the plate once moved north.

Positions: the Hawaiian-Emperor chain, rounded to the whole degree. Ages: University of Hawaii (SOEST) potassium-argon ages; Daikakuji: Sharp and Clague (2006); Detroit: Keller et al. (1995).