Magnetism

Ferrous Family- Fe, Ni and Co.
Magnetism can generally be done with this family.
Q; Is there something geographic about magnetism?
Yes.

Do the experiment where a piece of steel was given a twist, and it continued going around. This makes sense because of inertia. But at a certain point, it stopped and turned around.
This is because there is something in the North connecting the magnetism of that magnet (steel).
The earth is a huge magnet. The South Pole is in the Arctic. The Arctic is right above Canada. It's called the South Pole because if the magnet is attracted to that specific Pole that is in the North, then that means that it's South.
The Earth's South magnetic Pole is near the geographic North Pole.

If you have a nail made out of steel, and you want to make it magnetic, take something that's magnetic, and rub them together. But what you need to do is only rub in one direction. Rub it down or up, then take it off and do the same action again.
<u>Electron Spin</u>- the electron is going in a revolution around the nucleus, but then the electrons spin. So for every electron that spins clockwise, there is one going counterclockwise. But the Ferrous Family is different. There is no opposite action that's cancelling it out.
Therefore, every atom is a magnet, but they just have things neutralizing then. Ferrous metals do not and this is why they are magnetic.
<u>Magnetic Domain</u>-
Originally, when something isn't magnetic, all of the magnets inside are all random, in no specific order. But when you rub a magnet against it, it makes them become uniform, and they will have a pattern and therefore the positives will be facing one side, and negatives another.
Because of this, if you heat up a magnet, it loses its magnetism because heat makes things agitated, so all of the little magnets inside that atom will run all around and move fast, ruining the pattern of the magnets inside, and it won't be magnetic.
Any current carrying conductor establishes a magnetic field.