The West coast of America is home to some of the biggest mountain ranges in the world, caused by the collision of the American and Pacific plates. The state of Wyoming in particular is an interesting case of this deformation, being a result of "thin-skinned deformation", a type of deformation where the oceanic plate does not subduct as rapidly but instead stays almost parallel to the surface. This caused a large amount of deformation deep in the foreland of the western mountain range, one example of these being the Servier thrust belt in the state of Wyoming. These mountains differ slightly in their orientation that we would expect -some are almost perpendicular to the direction of shortening.

Our studies will focus primarily on the kinematics and the paleomagnetic imprint of a specific formation – the red beds of Triassic Ankareh Formation[1]. These were chosen due to their easy accessibility and their clear magnetic trace and strain markers such as cleavage veins, minor folds and faults due to layer parallel shortening that occurred during its deposition, lithification and deformation[2]. Core samples will be taken from many of the sites to be analyzed, which could tell us their original orientations, stress amounts and directions of stress, letting us get a better picture of the kinematics of the mountains in the Wyoming salient. The sites we are going to visit are mainly situated in the Western part of Wyoming, such as the Bighorn, Laramie, Wind River and Snake River Mountain ranges.

From the data we collect, we expect to see paleomagnetic data that would show us the evolution of the mountain range, and whether its current unconventional alignment is due to rotation after formation or due to other forms of deformation. We also would expect layer parallel shortening on the scale of 10% to 15%[3] in most places parallel to the shortening direction. This data will help us to better understand the evolution of the Wyoming salient and provide kinematic models that can be used in other cases of "thin-skinned" deformation.

References Cited,

[1] *Anisotropy of Magnetic susceptibility in weakly deformed red beds from the Wyoming salient, Servier thrust belt: relations to Layer parallel shortening and orogenic curvature, A. Weil, Adolph Yonkee, 2009*

[2] *Reconstructing the kinematic evolution of curved mountain belts: A paleomagnetic study of the Wyoming Salient, Servier thrust belt, USA, A. Weil, et al, 2009*

[3] *Anisotropy of Magnetic susceptibility in weakly deformed red beds from the Wyoming salient, Servier thrust belt: relations to Layer parallel shortening and orogenic curvature, A. Weil, Adolph Yonkee, 2009*