Stable Isotope Workshop

September 21st – 23rd 2023

DAY 1: Thursday September 21st - Bosque School

Where: Fontana Lab in the Pera Science Building

8:15–8:45 **Introductions and Workshop Overview (Snacks)**

8:45–9:30 **Isotope Overview (Seth Newsome):**
- Stoichiometry, Isotope Definitions, and Fractionation

9:30–10:00 **Carbon Isotopes in Plants (Emma Elliott Smith):**
- Photosynthesis: On Land (C_3/C_4) and In Water (Algae)

10:00–10:30 **Carbon Isotopes in Animals (Joshua Cortez):**
- Trophic Discrimination and Isotopic Incorporation

10:30–10:45 **BREAK**

10:45–11:15 **Nitrogen Isotopes in Plants and Microbes (Rachel Seddon):**
- Sources, Chemical Transformations, and Fractionations

11:15–11:45 **Nitrogen Isotopes in Animals (Emma Elliott Smith):**
- Trophic Discrimination and Isotopic Incorporation

11:45–12:00 **Group Project Overview (ALL)**

12:00–1:00 **LUNCH**

1:00–1:30 **Experimental Design (Alana Robinson):**

1:30–1:45 **Field Preparation (Groups with Group Leaders)**

1:45–3:45 **Bosque Field Sampling (Groups with Group Leaders):**
- Sample Collection and Field Preservation (divide into 3 groups)
- Protein-based: 15-20 samples/group; Plants: 10 samples/group

3:45–4:00 **Summary and Tomorrow Preview**

DAY 2: Friday September 22nd - University of New Mexico

Where: PAIS Main (West) Entrance

8:00–9:00 **Overview and Isotope Ratio Mass Spectrometry (SDN)**

8:30–10:30 **Lab Sample Preparation/CSI (Bench Top Stations)**
- 4 Stations: EA-IRMS, Homogenization, Weighing, Lipid Extraction/Wash

10:30–10:45 **BREAK**

10:45–12:00 **Project Sample Preparation (Groups with Group Leaders)**

12:00–1:00 **LUNCH**

1:00–1:30 **Hydrogen and Oxygen Isotopes in Water (Seth Newsome):**
- Isoscapes: Rayleigh Distillation, Latitude, Altitude, and Distance

1:30–3:45 **Project Sample Preparation (Groups with Group Leaders)**

3:45–4:00 **Summary and Tomorrow Preview**

DAY 3: Saturday September 23rd - University of New Mexico

Where: PAIS Main (West) Entrance

9:00–9:15 **Review and Overview (ALL)**

9:15–9:45 **Visualizing Isotope Data (Busquets Vass):**
- Manipulating Data in Excel
- Isotopic Space: Carbon versus Nitrogen Biplots
- Plotting Your Data

9:45–10:30 **Group Projects (Manipulate Data and Create Figures)**

10:30–10:45 **BREAK**

10:45–1:00 **Group Projects (Create Figures and Presentations)**

1:00–2:30 **LUNCH and Group Presentations (Brown Bag Style)**

2:30–3:30 **Summary and Future Projects**