ORIGINS OF PREHISTORIC POTTERY IN THE CAROLINA SANDHILLS: A CHEMICAL AND PETROGRAPHIC STUDY

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OVERVIEW

Principal components analysis (PCA) of the INAA data for the samples indicates the presence of four major chemical groups. The first two principal components account for about 80% of the variance in the data. These components are primarily associated with calcium, sodium, potassium, and iron. Group I consists of samples with high calcium and low sodium, suggesting a primary source of calcium carbonate (limestone or chalk) or limestone-containing sediments. Group II includes samples with high sodium and low calcium, indicating a source of sodium-rich materials such as Halite or Chalk. Group III consists of samples with intermediate calcium and sodium levels, suggesting a mixture of calcium and sodium-rich materials. Group IV includes samples with low calcium and sodium, suggesting a source of low calcium and sodium materials such as quartz or feldspar.

METHODS

In addition to using standard techniques for classifying pottery samples, we have characterized the constituents of each sample using instrumental neutron activation analysis (INAA) and petrographic examination. INAA provides a rapid and non-destructive method of analyzing the chemical composition of pottery fragments, while petrographic examination allows for the identification of individual mineral components.

RESULTS

The results of the chemical and petrographic analyses indicate two broad geographic source areas that correspond to the Piedmont and Coastal Plain provinces. The Piedmont province is characterized by higher calcium and sodium contents, while the Coastal Plain province shows a lower calcium and sodium ratio. The Petrographic analysis indicates that the clay fraction of the Piedmont pottery is dominated by quartz, while the Coastal Plain pottery contains a higher proportion of feldspar and mica.

REFERENCES CITED


