

Why Not in My Back Yard?

Field-Based Physical Geography Research in the Southeast

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Observations that submissions of physical geography research to the Southeastern Geographer have been low prompted us to question if the Southeast is understudied by physical geographers relative to other regions. We reviewed over 7,000 articles in eleven journals to estimate the frequency and types of field-based research being done. We also reviewed the online publication lists of physical geographers living in the Southeast to determine where they conduct their research. Based on the journal articles reviewed, 72% of the field sites were in international locations. Of the 28% that used U.S. field sites, only 8.4% (2.3% of the total) were in the Southeast. Given that the Southeast makes up over 12% of the land area and is home to 37% of the geography programs in the U.S., the concentration of research in the area is low. Aside from being understudied, field-based research in the Southeast is also unevenly distributed. North Carolina and Georgia were the most studied states. North Carolina was the most frequently used location for geomorphology studies and Tennessee was cited most often for biogeography. Kentucky and South Carolina were the least studied states. Few researchers from states outside the SEDAAG region come into the Southeast to conduct research. At the same time, a significant portion of the research efforts of geographers living in the Southeast have been put

toward field sites in other states and countries. The resulting lack of focus on the unique environments of the Southeast is limiting our knowledge of the region.

KEY WORDS: physical geography, southeastern U.S., field research, research trends, representation

INTRODUCTION

Self-reflection is common among geographers (Moss 1979; Baker and Twidale 1991; Brunn 1997; Rediscovering Geography Committee 1997; Guy, 1999; Orme 2000; Cutter et al. 2002; Thrift 2002; Ferguson 2003). The exercise of self-examination helps us to contextualize the evolution of our discipline and, to a limited extent, predict and shape its future. This article developed out of comments by the new editors of the *Southeastern Geographer* about a relative dearth of physical geography articles in the journal (Lecce and Alderman this issue). Although a multidisciplinary journal, the *Southeastern Geographer* has, in practice, been mostly an outlet for research in human geography. On an annual basis, physical papers have

averaged only about 20% of the journal's articles. After rising to about 40% during the late 1980s and early 1990s physical papers are again in sharp decline, falling to about 17% for the past five years (Lecce and Alderman this issue). The number of submissions is slightly below the norm when compared to the number of physical geographers in southeastern departments, which averages about 26% of faculty in geography departments.

Given this, we began to wonder if the relative dearth of submissions of physical geography articles to the *Southeastern Geographer* is indicative of field-based physical geography activity in the Southeast as a whole. This paper is focused around, and attempts to address, some of the questions that we began to ask: Is the Southeast studied by physical geographers as much as other regions in the U.S.? What places in the Southeast are most and least studied? Who is doing research in the Southeast and what are southeastern geographers doing? None of these questions are particularly easy to answer, but addressing them may lead to an improved understanding of the presence of southeastern physical geography in the larger discipline.

Graf (1984) referred to the Southeast as an invisible region of American geomorphology, citing the early lack of major universities in the south as a reason for the historically few geomorphology research projects conducted in the region. More directly important than the lack of universities would have been the associated scarcity of geomorphologists in the area (Costa and Graf 1984). It seems reasonable that a similar pattern would exist for all fields of physical geography. Since Graf's 1984 study, there has been a sig-

nificant growth in geography programs in southeastern states (Wheeler 1996). Although the growth of major university programs and the associated increase in physical geographers in the region has almost surely led to increased local research, the increase has not fully translated into an equitable representation of the Southeast in the subfields of physical geography.

The status of the southeastern landscapes in physical geography is important because a lack of prominence in the discipline means a loss of representation. The unique environments of the Southeast have historically played a minor role in our overall understanding of physical geography; yet reversing this trend would enrich both general knowledge and theoretical developments in physical geography. Location influences theory (Graf 1984) and so a lack of work on the landscapes within the Southeast leads to an underrepresented influence that the region will have on the development of ideas in physical geography. As integrated landscape studies become more prominent (cf., Smith et al. 2002), a varied and representational set of field sites becomes increasingly important and necessary. Following suite, processes need to be understood within the context and scale of the Southeast since the uniqueness of its environments require individualized understanding of processes and interactions specific to the region (cf., Phillips 1999, 2004).

DATA COLLECTION

For this project we selected the boundary of the Southeastern Division of the Association of American Geographers (SEDAAG)¹ as our study area. Although

somewhat arbitrary, it is a reasonable grouping that we believe is representative of the southeastern U.S. Two methods were used to collect data for this study. The first was a search of journal articles with field sites within the Southeast. Journal content searches are a common method for studies concerning research trends and, despite some of its shortcomings and the labor intensive nature this exercise, yields reasonable results (Turner and Meyer 1985; Dwyer 1997; Groop 1997; Gregory et al. 2002). The second method looked at research by geographers living in the Southeast by reviewing online publication lists of individual faculty in the region. This method relied entirely on the comprehensiveness of both departmental and individual web pages.

We classified papers into the standard subdisciplines of geomorphology, biogeography, and climatology. In searching through thousands of articles it became obvious that such divisions are inadequate to fully capture the range of topics researched by physical geographers (cf., Gurnell and Petts 2002). Nonetheless, it is a convenient, if not robust, approach to categorizing and simplifying an otherwise anfractuous dataset. In addition, we focus mostly on comparisons between geomorphology and biogeography, largely leaving climatology to a separate commentary.

Journal Searches

The search of journals was both fruitful and problematic. We reviewed 10 years of articles (1994–2003) from eleven journals that were identified, with the help of colleagues, as common publishing outlets for geographers. Three were dominantly geomorphology journals (*Geomorphology*, *Earth Surface Processes & Landforms*, and

Catena), three were mostly biogeographical in nature (*Journal of Biogeography*, *Landscape Ecology*, and *Natural Areas Journal*), two were specifically climate journals (*Journal of Climate* and *Climate Research*), and three were oriented toward general physical geography (*Physical Geography*, *Southeastern Geographer*, and *Annals of the Association of American Geographers*). These journals include both domestic and international outlets. Although we already knew that the *Southeastern Geographer* had a low percentage of physical papers, we felt it still likely represented an obvious outlet for work focused in the southeastern U.S. The *Annals of the AAG* is also notoriously lacking in physical papers, but was included since it is considered a flagship interdisciplinary journal for geography within the U.S. Articles were searched first by title. If a site location was not clear from the title, the abstract was consulted. The text of the articles was searched, if possible, for field sites if one was not indicated in the title and abstract. Articles were categorized by the state in which they were conducted. If the study did not have a field site, it was listed as such (papers involving theory, for example). If we were unable to identify either a field site or the lack of a field site, then the article was listed as unknown. The preferred method of searching was the use of online databases (Science Direct, Ingenta, Jstor, and publishers' webpages). Most databases allowed for keyword searches of the contents. We used the state names as keywords as well as Appalachian, southeastern, Southeast, south east US, and Gulf States. These yielded short lists that were then examined manually to determine if they met the criteria. Online searches of titles were available for all of the journals except the *Southeastern*

Geographer, which was searched entirely by hard copy. When such searches did not allow for full-text viewing online, secondary searches of hard copies of the journals were done for articles that did not clearly identify a field site in the title. In most cases, a combination of different searchable data bases or a combination of online materials and hard copies had to be used to fully review each paper and to get the full data set. *Natural Areas Journal* was available for only eight years, but all other journals were reviewed for the past 10 years.

Articles were classified as having field sites within the SEDAAG region, outside the SEDAAG region (but in the U.S.), or in international locations. For articles with field sites in the Southeast, additional data were extracted including state(s) where the field site was located, author's affiliation, and type of research. Only first authors were considered to prevent duplication of articles in the final count. In addition, only authors associated with geography or geography-combined departments were considered for most analyses. A large number of biogeographical studies, for example, were excluded because author affiliations were departments of biology or environmental science. Although these certainly represent research in the Southeast, we are interested in what geographers are doing in the Southeast. We acknowledge that geographers might work in other departments, but that situation is likely of minor relevance.

Vita searches

The second method was designed to better understand what researchers in the Southeast are doing. For this we reviewed all the available online web pages of physi-

cal geographers in the SEDAAG region. Information regarding field sites was determined from article titles on research pages or vitas. All degree-granting geography departments or combined geography departments were considered. Only physical geographers were included. Researchers identifying themselves as specializing in another area of geography or in another discipline (e.g., geology or archaeology) were not included. Although most faculty did provide lists of published papers, a portion of individuals, and in a few cases, whole departments, did not. They could not be included in the dataset. We attempted to review all research published during the 10-year period, 1994–2003. Some individuals had more limited lists, either because they were new faculty who had not been publishing for that length of time, or they included only a short list of "recent" or "select" publications. Only published articles in peer-reviewed journals or book chapters were included. Books and non-reviewed articles were excluded. The field location of the research was recorded for those articles that identified a field location in the title. Others were classified as having no field location if the study clearly did not specify the location of the study. All others were labeled as unknown.

DATA RESULTS AND DISCUSSION

Of the 7,396 articles reviewed in the eleven journals, just 3,552 (48%) clearly identified a field location as an important component of the work. The articles that did not identify field sites were comprised of works of theory or methodology that often did not require a primary data set, or in which the use of a small amount of field data was almost inconsequential to the re-

search. Other research was based on laboratory experiments or computer modeling and did not draw upon field-based data. Of the articles with identifiable field sites, most (72%) were done internationally. Twenty-eight percent of the field sites were in the U.S. and only 8.4% of U.S. papers (2.3% of the total) were conducted by geographers in the Southeast. Of the 8.4% of the papers using southeastern field sites, geomorphology was most prevalent making up 40% of the articles, with biogeography and climatology each making up 30%. Climate research created the most significant problem in the data set because the research often used large study areas that were too expansive to be clearly identified as research in or about the southeastern U.S. Those studies instead tended to be large in scope and we included them only if they limited themselves to, or were overwhelmingly dominated by, data from southeastern states. Such site locations identified as U.S. or North America were not included. The other issue with climate research was that the studies were not location-based, in most cases, in the same way as geomorphology and biogeography. Most climate studies relied on climate station data, removing the researcher from "on site" observation. In most cases, the appearance of a particular state as a study site referred solely to the location of one or more monitoring stations from which data were used. The locations of the stations were, in essence, a proxy for field sites.

Although most papers using southeastern field sites were authored by researchers affiliated with universities in the Southeast, 14.5% of the articles were authored by people living in other states. In several of those cases, however, we knew

that the papers were authored by people who had recently left the Southeast and were finishing work they had started before they moved. A true representation would indicate, therefore, that the vast majority of research in the Southeast is done by local researchers.

In addition to the outflow of research efforts, the use of southeastern field sites can be influenced by the degree of influx of new faculty to the region. Newly transplanted faculty, who are typically at the assistant professor level, often take several years to finish existing work and develop local research sites. This does not appear to be a major influence in the Southeast. We examined the faculty lists of all degree-granting geography and geography-combined departments in the SEDAAG region as a surrogate indicator of the time faculty have had to establish local research. Although most assistant professors did come to the Southeast from other regions, physical geography faculty in the Southeast are actually well established, with 68% of the faculty holding the rank of associate professor or professor. A high number of associate and full professors suggests that most researchers in the Southeast have had ample time to develop local research, but have not done so for other reasons.

Variations within the SEDAAG region

Whereas the amount of field research done by geographers in the Southeast is relatively disproportional nationally, the distribution of that work throughout the southeastern states is as equally disproportional (Fig. 1). North Carolina and, to a lesser extent, Georgia were the most common field locations in the Southeast for physical geography studies. Kentucky and

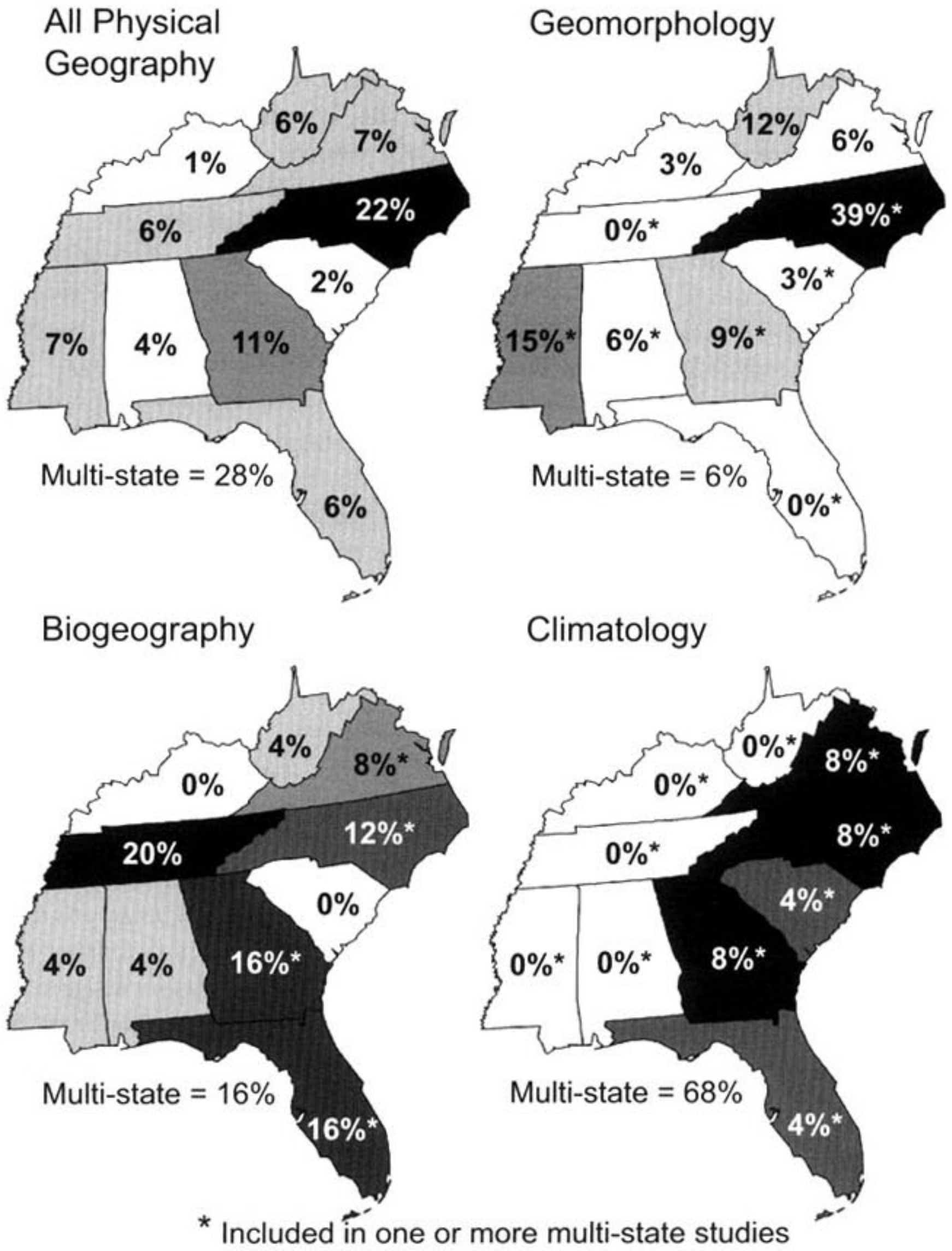


Figure 1. Maps showing the distribution of physical geography research in the southeast based on a survey of 7,396 journal articles.

South Carolina represented the least studied states. The prominence of North Carolina results from its popular use in field-based geomorphology research; accounting for 39% of geomorphology articles from the journals we reviewed (Fig. 1). Mississippi was the second most studied state for geomorphology, accounting for 15% of the field-based articles. Kentucky, South Carolina, Tennessee, and Florida were the least represented locations for geomorphology (Fig. 1). The absence of research indicated in Figure 1 in Tennessee and Florida is misleading because field sites in both states were used in multi-site/multi-state geomorphic studies. Furthermore, readers should bear in mind that we surveyed only 11 journals. Zero percent only indicates a relatively low concentration of research, not necessarily a complete absence. Geomorphology articles were dominated by fluvial topics; half of the geomorphology articles surveyed fit this category. Nearly one quarter of the geomorphology articles dealt with soils and/or soil loss. Coastal, montane, and karst environments had equal representation, with 8% of the geomorphology articles each.

The distribution of biogeography field research was much different (Fig. 1). Tennessee was the most studied of the southeastern states, being home to field sites in 20% of the biogeography articles. The majority of the remaining studies were conducted in Georgia, Florida, and multi-state field sites. North Carolina also had a significant number of articles with 12%. Kentucky and South Carolina were again the least studied sites in the Southeast. There were two trends within the diverse range of research topics addressed in the biogeography articles surveyed. Flora is

vastly more studied than fauna with forested environments receiving the most attention. Landcover change, especially as a consequence of human action, and land-use management were common themes of discourse.

As mentioned before, climate studies were dominated by multi-state studies driven by the use of regional climate station data sets. The journal searches revealed that 68% of the climate studies were regional in scale. Although no state represents a high proportion of climate research, Figure 1 clearly shows a focus on the coastal states from Virginia to Florida. This pattern of focusing climatic studies on the coastal Southeast is, surprisingly, not driven by studies of tropical storms and hurricanes. Instead, the single state and multi-state studies were a mixture of topics ranging from precipitation patterns to radiation budgets. Only a few studies dealt directly with tropical systems.

Southeastern Researchers and the Outflow of Research Effort

Two converging phenomena are driving the relative absence of the use of the Southeast in research. First, very few people from outside of the region are doing work in the Southeast. This is in sharp contrast to the western and southwestern regions of the U.S., which we suspect see a disproportionately high number of people from other regions, the Southeast included, apply their efforts to those locations (Orme 2000). The second issue, revealed by our online vita searches, is that people living in the Southeast region often conduct research in other places in the U.S. and internationally. Only 38% of research done by people living in the Southeast was conducted using a location

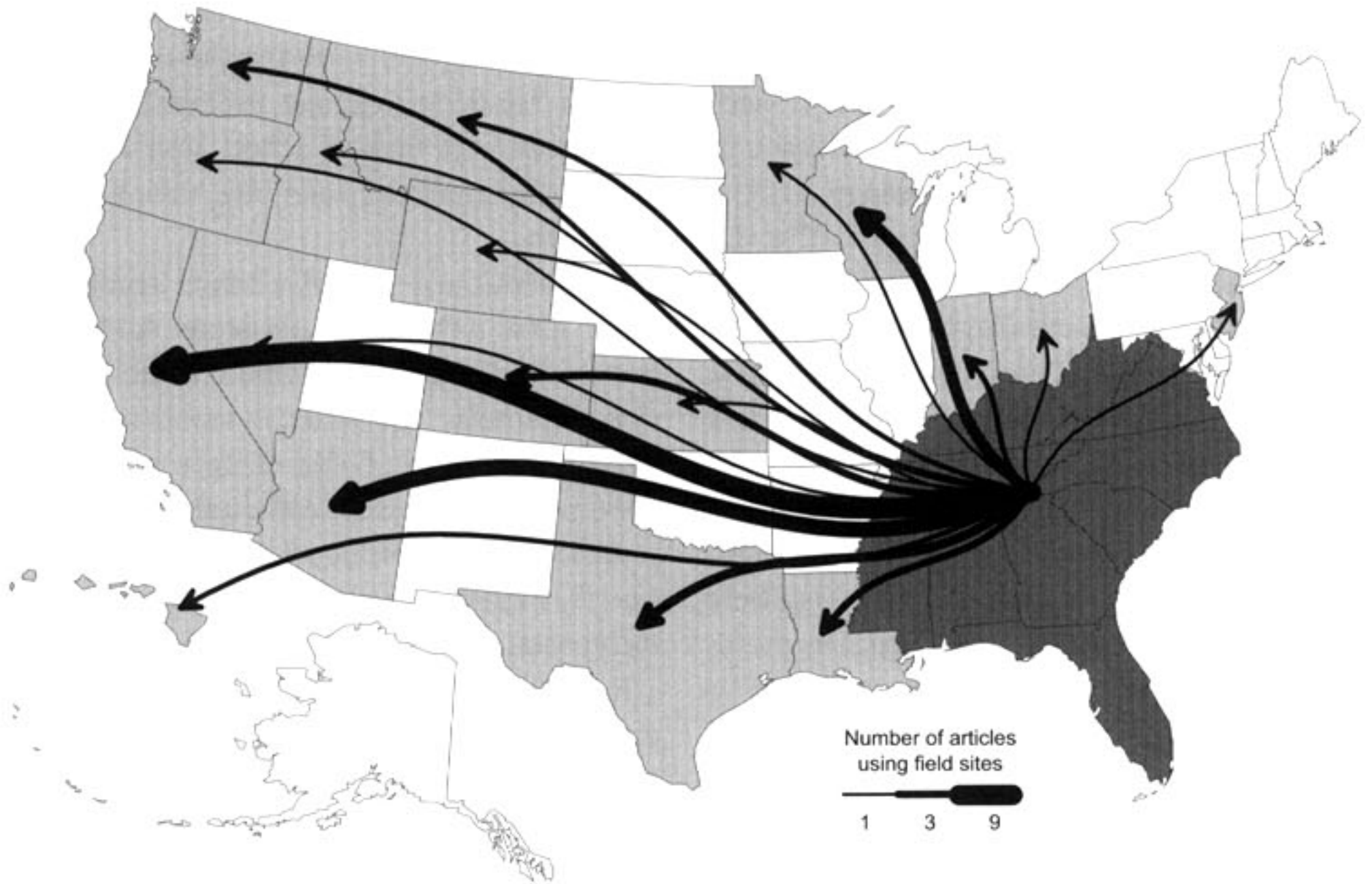


Figure 2. Map of the outflow of research efforts from the southeast to other states. Data are from online publication lists of southeastern geographers. The flow lines represent 83 articles out of 378 articles with known field sites.

in the Southeast (based on 378 published articles). Twenty-four percent was conducted internationally, and another 38% had no field site (or at least we were unable to identify one). Figures 2 and 3 provide a visual indication of the exportation of research efforts from the Southeast to other regions in the U.S. and the world. There is a clear and significant focus on work in the western states, with California and Arizona dominating. There is also a trend toward work in the Rocky Mountain region (Fig. 2). The international export of research effort spans an impressive number of countries and regions (Fig. 3). This speaks highly of the quality of researchers in the region, however, the issue still re-

mains that a significant amount of intellectual effort is lost to the already understudied Southeast.

We are not implying that research in international locations is not positive or that the numerous other understudied regions of the world are less important than the Southeast. The exportation of research efforts by faculty in the Southeast leads to a greater dissemination of regional perspectives and allows for the return of external knowledge and experience. The unfortunate side effect of southeastern researchers not doing more local work, however, is that it does reduce our understanding of local environments in the Southeast. In effect, as we become more

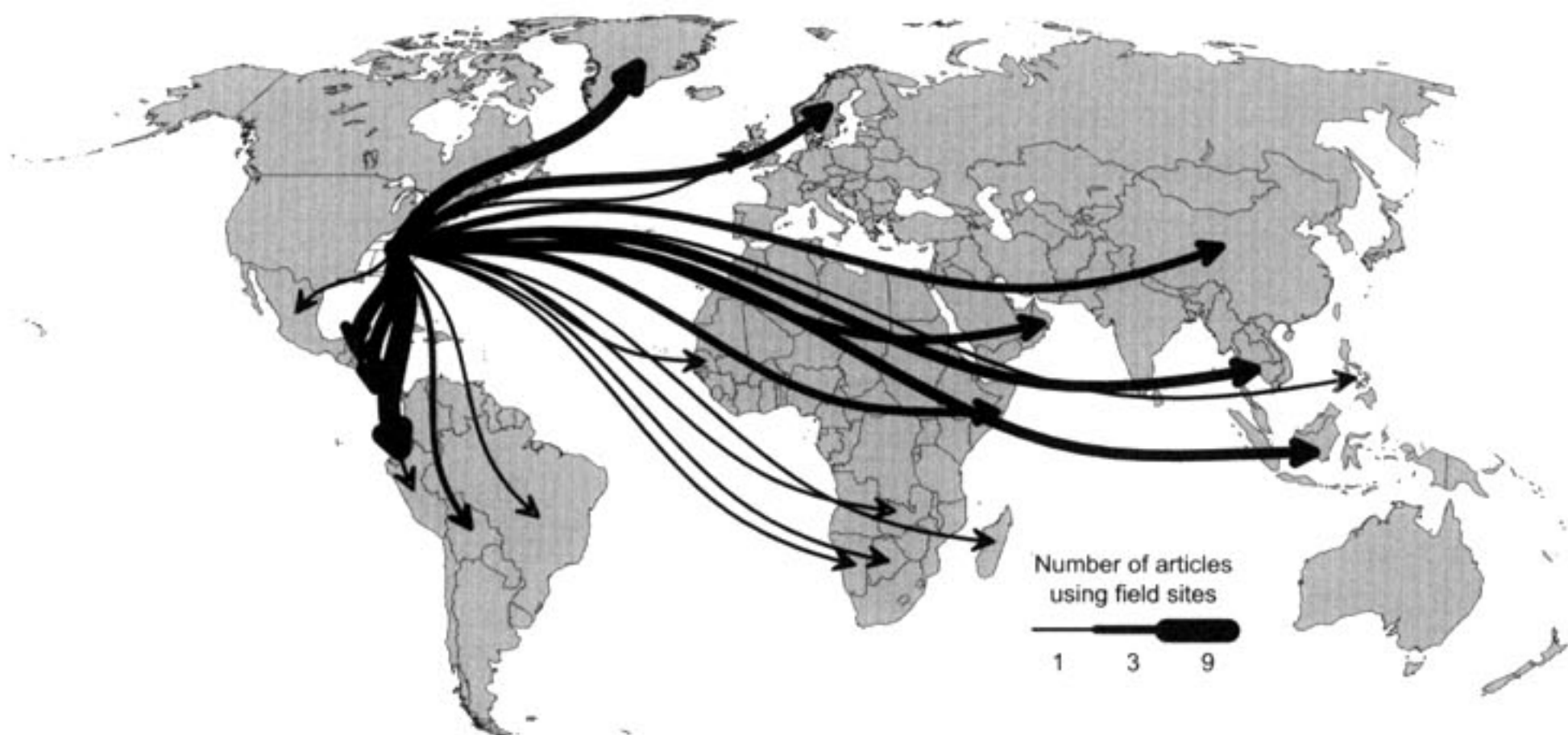


Figure 3. Map of the outflow of research efforts from the southeast to other countries. Data are from online publication lists of southeastern geographers. The flow lines represent 92 articles out of 378 articles with known field sites.

knowledgeable of areas outside the region, we limit our, as well as others', knowledge of the Southeast.

CONCLUSIONS

The sentiment expressed in the title of this paper might be a bit melodramatic. Many might feel that 8% of field-based physical geography research in the U.S. being conducted in the Southeast is a reasonable number. However, when we consider that the 10-state SEDAAG region is home to 12% of the U.S. landmass and 37% of the geography departments (or geography-combined departments), the number seems unbalanced. Although we would hesitate to say the Southeast remains an "invisible region" (cf., Graf 1984) for physical geography, we do believe it is still understudied relative to other locations, most notably the Rocky Mountains and southwestern U.S. Ivester

(2004) provided similar findings in which he used Internet searches to map regions of what he termed "geomorphic activity". He found indirect evidence that most geomorphic activity in the U.S. occurred in southwestern states, the Rocky Mountain region, and north Atlantic states. He also found that the Southeast was one of the regions with the least amount of activity.

The Southeast is not devoid of field sites or researchers studying them. Biogeographical and landscape studies in the region are, when considering the journals we surveyed, popular with scientists outside the discipline. In fact, we found slightly more articles using southeastern field sites written by researchers in other disciplines than by geographers. Why is geography not taking the lead in embracing this research area? This question cannot be answered with our current data set, but we speculate that several issues may be at work.

One problem relates to perception and matches well with a general sentiment that is often heard from physical geographers; that there simply isn't much going on in the Southeast. From experience, we believe this to be especially true among geomorphologists (much less so with biogeographers) who tend to prefer the more dramatic landscapes of the west. Although the Appalachian Mountains and coastlines do offer dynamic environments, much of the flat, agricultural, coastal plain has a subtle appeal making it difficult to excite students. The difficulty in captivating students' enthusiasm creates motivations to look for field sites traditionally perceived as dynamic. This issue is exacerbated by the fact that what little work is being done in the Southeast is disproportionately focused on only a few areas, giving future physical geographers an increasingly skewed understanding of the Southeast. Other issues, such as relatively little public land and access to private property, might have an impact on research efforts in the Southeast. Issues of private land ownership are not, however, unique to the Southeast. Similar stories can be found in the midwestern and northeastern states, both of which appear to be more studied than the Southeast. Perhaps more important is the power of history. The Southeast has never been a major area of study in physical geography. The historical lack of focus and the diminished representation of the Southeast in literature and theory has, we suspect, created a self-fulfilling prophecy that inherently biases researchers toward other environments.

Of most concern is that all of this amounts to a marginalization of a southeastern perspective in our larger under-

standing of physical geography. If research gives landscapes a voice, then the voice of the Southeast is in danger of being absent in the generation of theory and the dissemination of perspective in physical geography. As the editors of the *Southeastern Geographer* call for more submissions of physical papers to the journal, we propose that it should also be a call for physical geographers of the region to take a second look at their back yards.

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NOTES

1. Puerto Rico is part of the SEDAAG region but was excluded from this study, in which we used the 10 states within the contiguous U.S. (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia). Inclusion of Puerto Rico with the exclusion of the rest of the Caribbean region made little sense. Doug Gamble (this issue) makes a compelling argument for the inclusion of the Caribbean region in southeastern studies, but it was outside the scope of our argument. As such, the few articles that we found using Caribbean locations as field sites were categorized as international.

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