I. Teacher Preparation

A. Elementary School Licensure Requirements

1. Licensure Grade Levels[1]

a. Does the state offer an Early Elementary Education credential (Preschool/Kindergarten to Grade 2/3)?	Yes	Early Childhood (P-3)
b. Does the state offer an Elementary Education credential (Kindergarten/Grade 1 to Grade 5/6)?	Yes	Elementary (K-6)

2. Early Elementary[2]

a. Is an educational practice examination required for licensure?	Yes
b. Is an examination in reading and writing or language arts required for licensure?	Yes
c. Is a mathematics examination required for licensure?	Yes
d. Is a science examination required for licensure?	Yes

3. Elementary Education[2]

a. Is an educational practice examination required for licensure?	Yes
b. Is an examination in reading and writing or language arts required for licensure?	Yes
c. Is a mathematics examination required for licensure?	Yes
d. Is a science examination required for licensure?	Yes

4. Licensure Renewal

a. What is the period of validity for an educator's license?	Less than 5 years	
	5 years	X[3]
	Greater than 5 years	

b. Can in-service teachers receive certification credit for professional development courses/programs in Earth and Space Sciences?	Yes	X[4]	
	No		
	Local issue		
	Unknown		

B. Elementary School Curriculum Support

1. Guidelines for Curriculum Development

a. Does the SEA provide guidelines for curriculum development, beyond the state's science standards?	Yes

b. If yes, which of the following does the state provide?	1. Science frameworks		
	2. Curriculum maps		
	3. Learning progressions		
	4. Benchmark maps		
	5. Templates for unit design		
	6. Curriculum development guides		
	7. Model units		
	8. Lesson plan templates/guides		
	9. Web-based lesson plan portals	X	Alabama Learning Exchange (ALEX)[5]
	10. Model lesson plans		
	11. Assessment guidelines		

2. Instructional Materials[6]

a. At what level does adoption of instructional materials occur?	State level	X
	Local level	

b. If the state is an adoption state, do adopted materials in science include those that address topics specific to the geosciences?	Yes	Science and Technology for Children (STC) Series K-2 STC: Weather; 1-3 STC: Soils; 2-4 STC: Rocks and Minerals; 3-5 STC: Land and Water Great Explorations in Math and Science (GEMS) Series GEMS lower elementary modules are probably specific to geosciences, but it is hard to tell from titles, e.g. On Sandy Shores. At the upper elementary level, they are specific to geoscience, e.g. Moons of Jupiter, Stories in Stone, Earth-Moon-Stars, and Ocean Currents. Full Option Science System (FOSS) 1-2 FOSS Air and Weather; 1-2 FOSS Pebbles, Sand, and Silt; 3-4 FOSS Earth Materials Delta Education, Delta Science Modules (DSM) 3-4 DSM Earth Movements; 3-4 DSM Solar System; 3-4 DSM Weather Instruments Harcourt Science K-6 Harcourt Science K-6 and Houghton Mifflin Science K-6 programs are specific to Alabama and probably address AL standards which include geoscience topics. Macmillan/McGraw-Hill Science K-6 1 -The Sky and Weather; 1 – Caring for Earth; 2 – Changes on Earth; 2 – The Sun and Its Family; 3 – Our Earth; 3 – Cycles on Earth and in Space; 4 – Earth and Beyond; 4 – Water and Weather; 5 - Earth and Its Resources; 5 – Astronomy, Weather, and Climate Scott Foresman Science K-6 Titles include an "Earth" module at each grade (1-5).

3. Support for New Standards[4]

a. Does that state provide resources to school systems to effectively	Yes	X	The SEA has created AMSTI – The Alabama Math, Science, and Technology Initiative with the aim of improving math and science teaching statewide. The
	No		
	Local issue		

implement the standards as they change?	Unknown		initiative provides three basic services: professional development, equipment and materials, and on-site support. Each region of the state has an AMSTI site to support schools within the region. ASMTI is a line item in the state budget for materials and professional development. Geosciences materials and professional development are targeted for certain grades where those topics are taught.

4. Professional Development[4]

a. Does the SEA provide professional development that is, at least in part, specific to the geosciences?	Yes	X	Through the Alabama Math, Science, and Technology Initiative (AMSTI). Each region of the state has an AMSTI site to support schools within the region. AMSTI is a GLOBE partner.
	Yes, but independent of SEA		
	No		
	Local issue		
	Unknown		

II. Curriculum

A. Elementary School State Science Standards

1. Organization[7]

a. What is the name of the state's elementary school science standards?	2005 Alabama Course of Study, Science

b. What is the grade-level arrangement of the standards?	Grade specific	X
	Grade-level bands	
	Benchmark grade levels	

c. How are the standards outlined?	Overarching standard statements (level one)	X	d. What terms are used to identify each level?	Content Standards
	Sub-standard statements that provide more detail to the overarching standards (level two)			

2. Content[7]

a. Are the science standards subdivided according to scientific discipline (Physical Science, Life Science, and Earth and Space Science)?	Yes	
b. Are the Earth and Space Science standards identified by core ideas in the geosciences?	No	
c. Do the state's standards include current issues in the geosciences? Current issues in the geosciences can be described as Earth science processes altered by human activities or Earth science processes that affect human well-being.	Yes	In 1st grade, students examine conservation of natural resources and recycling. In 3rd grade, students continue looking at natural resources recycling, reusing, conservation, and protection of the environment. They are asked to consider the impact of humans on the environment. In grade 4, students look at space exploration and Alabama's role in the space industry. In grade 5, students identify technology used to study planets.
d. Do the state's standards include career exploration in the geosciences?	No	

3. Development

a. When were the standards adopted or last revised?	Within the last two years (2014-2015)		Adopted in 2005[7]
	Between 3-6 years ago (2010-2014)		
	Between 7-10 years ago (2006-2009)		
	More than 10 years ago (before 2006)	X	

b. Does the state have plans to review/revise its science standards?	Currently under review	X[4]	
	Within the next 5 years (2015-2020)		
	Between 5 and 10 years from now (2020-2025)		
	No plan or timeline exists		
	Unknown		

B. Middle School State Science Standards

1. Content[7]

a. What is the name of the state's middle school science standards?	2005 Alabama Course of Study, Science
b. Are Earth and Space Science topics included in the standards?	Yes
c. Is Life Science and Physical Science content included in the standards?	Yes

C. High School State Science Standards

1. Content[7]

a. What is the name of the state's high school science standards?	2005 Alabama Course of Study, Science
b. Are Earth and Space Science topics included in the standards?	Yes
c. Is Life Science and Physical Science content included in the standards?	Yes

D. High School Course Requirements

1. Credits Required for Graduation[8]

a. What is the total number of credits required for graduation?	24
b. What is the number of science credits required for graduation?	4

2. Course Content[8]

a. Is Life Science required?	Yes
b. Is Physical Science required?	Yes
c. Is Earth Science required?	No
d. Is Environmental Science required?	No
e. Is Earth Science accepted?	Yes
f. Does Earth Science have to be lab-based?	Not stated

III. Instruction

A. Elementary School Approaches to Instruction

1. State Science Standards[7]

a. Do the state's science standards provide guidelines regarding any specific approach to be used for science teaching?	Yes
b. If so, what is the term used to identify this approach?	Inquiry-based learning

c. Do the state's science standards provide a rationale for this approach?	Yes

d. If so, what is the rationale?	Effective science instruction emphasizes critical thinking and investigative processes that reveal consistencies, relationships, and patterns. The science laboratory, therefore, should be thought of as any place where scientific inquiry occurs, whether it be the traditional laboratory, classroom, playground, science museum, amusement park, or beach.

2. Guidelines for Curriculum Planning[7]

a. If the state offers guidelines for curriculum planning, do these advocate more specific strategies for science instruction?	Yes	The 2005 Alabama Course of Study, Science (the State's standards document) has a section called "Position Statements" which emphasize attributes of effective science instruction. One part is titled, "Instructional Model" and describes the use of the Five E Instructional Model. No other instructional models are offered.
b. If so, what are the strategies?	5E Learning Cycle	

3. Technology

a. Are decisions regarding the use of technology in elementary science classrooms made at the state level or local level?	Local Level
b. What kinds of technology are being used by elementary school science teachers in the state?	Unknown

IV. Learning Contexts

A. Elementary School Classrooms

1. Class Size[4]

a. What is the average number of students in an elementary classroom?	Unknown
b. What is the maximum allowable number of students in an elementary classroom?	There are caps for grades K-2 and 3-5. Approximately 22-24 would be the maximum class size.

2. Instructional Time[4]

a. At the elementary level, are teachers recommended or required to dedicate a certain amount of instructional time to science?	There is no time requirement		There is a suggested 30 minutes per day at the K-2 level and 45 minutes per day at grades 3-5.
	Local decision	X	
	Teachers must spend a certain amount of time teaching science.		

B. Elementary School Support Services

1. Specialized Support[4]

a. Are there specific policies in place regarding English as a Second Language (ESL) and Special Education services that could impact science instruction (e.g. pull-out or push-in models)?	Local level decision		Depends on individual IEP. Most accommodations are needed for assessment. Most students can participate easily in science. Special population students tend to be remediated during science class.
	Depends on the specifications of a student's IEP or ILP	X	
	Teachers must follow specific practices regarding science		
	Unknown		

V. Extra-Curricular Programs

A. Elementary School Geosciences Enrichment Opportunities

1. After-School and Informal Education[4]

a. Are opportunities to engage in geoscience-related topics outside of school being offered to students in the state (e.g. after-school programs and informal education programs)?	Yes

b. If so, what are they?	Alabama Energy Education Program; Alabama Energy Education Program; Alabama EPSCoR; Alabama Department of Conservation and Natural Resources; Alabama Forestry Association; AL Junior Acad Sci - Exp Design to AL Sci Fair and Gorgas Scholarship for 2014; Alabama Water Watch ; Alabama Wildlife Federation: BEST (Boosting Engineering, Science, and Technology) ; Dauphin Island Sea Lab; Discovering Alabama; Dragonfly Environmental Education; Engineering is Elementary™ Professional Development HUB; Gulf Coast Exploreum Science Center; Legacy -Partners in Environmental Education; McDowell Environmental Center; McWane Science Center; NASA Marshall Space Flight Center; Texas Instruments Education Technology ; Winnataska - Consortium for Teacher Education in Environmental Studies; Wiregrass Math & Science: WRATT

2. Remedial Education[4]

a. What remedial supports are in place for geosciences topics with which students are struggling?	Local level decision	X	Remediation is decided at the local level. The state provides Scantron Performance Series (formerly Global Scholar) which can be used for benchmarking purposes.
	Remediation services are being provided to students in science		
	No remediation support in science		
	Unknown		

VI. Monitoring Systems

A. Elementary School Statewide Science Assessment

1. Structure and Content[9]

a. What is the name of the statewide standardized test in science at the elementary level?	ACT Aspire
b. At what grade(s) is the assessment implemented?	3, 4, and 5
c. Does the statewide science assessment measure achievement of the state's standards, i.e. is the assessment aligned with state standards?	Yes
d. Is the content of the statewide science assessment sub-divided by discipline, namely Physical Science, Life Science, Earth and Space Science?	Yes

e. Are there any plans for revising or changing the current elementary level science assessment?	No plans for revision	X	The science assessment was new in 2014. It has been given once. Not all reports are back yet. It is the ACT Aspire Suite.[4]
	Revision is planned, but timeline is unknown		
	Revision is planned with implementation date set		
	Unknown		

2. Results[10]

a. Is student achievement measured by Performance Level Descriptors?	Yes
b. If yes, how many performance levels are there?	4

3. District Level Reporting[11]

a. At the district level, are the percentages of students performing at each PLD reported to the public?	Yes	
b. At the district level, is student achievement reported according to scientific discipline (Life Sciences, Physical Sciences, Earth and Space Sciences)?	No	
c. If yes, is this data available to the public?	N/A	

4. State Level Reporting[10]

a. At the state level, are the percentages of students performing at each PLD reported to the public?	Yes	
b. At the state level, is student achievement reported according to scientific discipline (Life Sciences, Physical Sciences, Earth and Space Sciences)?	No	
c. If yes, is this data available to the public?	N/A	

B. Elementary School International Assessments in Science

1. TIMSS[12]

a. Has the state participated in the Trends in International Mathematics and Science Study	Yes

(TIMSS)?	

b. If yes, in which years did the state participate?	1995	
	2003	
	2007	
	2011	X

C. Middle School Statewide Science Assessment

1. Structure and Content[13]

a. What is the name of the statewide standardized test in science at the middle school level?	ACT Aspire Science Test[14]
b. At what grade(s) is the assessment implemented?	6, 7, 8
c. Does the assessment address Life Science concepts?	Yes
d. Does the assessment address Physical Science concepts?	Yes
e. Does the assessment address Earth Science concepts?	Yes

C. High School Statewide Science Assessment(s)

1. Structure and Content[12]

a. What is the name of the state's standardized science assessment(s)?	ACT Aspire Science Test[13]	Alabama High School Graduation Exam (AHSGE)[15]
b. At what grade level is the assessment implemented?	Grade 10 begins in 2015-2016	11th grade test, will be discontinued after July, 2015
c. Does the assessment address Life Science concepts?	Yes	Yes
d. Does the assessment address Physical Science concepts?	Yes	No
e. Does the assessment address Earth Science concepts?	Yes	No

VII. Accountability

A. School Level

1. Individual Student[16]

a.	Does the state produce an Individual Student Report (ISR) that describes a student's performance on the state's science assessment?	Yes	Individual student reports are generated from the ACT Aspire. Parent reports are available and sent home at the discretion of the local school district.[4]
b.	Is the ISR made available to a student's parents or guardians?	Yes	
c.	Is the ISR made available to a student's teacher?	Yes	
d.	Does the ISR report student's performance in terms of scale score and achievement level?	Yes	
e.	Does the ISR subdivide results by science discipline (Physical Science, Life Science, Earth and Space Science)?	No	

2. Teacher Appraisal[4]

a.	Are students' results on the statewide science assessment a component of teacher evaluation?	No

B. District Level

1. District Accreditation[4]

a.	Are student outcomes in statewide science assessments at the elementary level part of accreditation of public schools at the district level?	Yes		Not decided by state. Districts are accredited through AdvanEd (formerly SACS).
		No		
		At a future point		
		Local decision	X	
		Unknown		

C. State Level

1. Statewide Monitoring[4]

a.	Are student outcomes in statewide science assessments at the elementary level used in monitoring the adequacy of state educational systems?	No	Undergoing monitoring changes because of the AL wavier for NCLB. There is a new accountability plan. Assessment scores are only one piece for accountability. (Math and Language Arts only)

2. Trends in Student Outcomes[10]

a.	Does the SEA report to the public performance results on the state science assessment over time?	Yes

b.	If yes, how	3 years (2011-2012 to 2013-2014)	

many years of achievement data are available?	4-7 years (2007-2008 to 2013-2014)		
	8 to 10 years (2004-2005 to 2013-2014)		
	11 or more years (before 2004-2005)	X	13 years of data (2001-2014)

c. Are the results also subdivided by science discipline (Life Sciences, Physical Sciences, Earth and Space Sciences)?	No

[1] Alabama State Department of Education, Teacher Certification, Certificate Renewal of Professional Educator Certificates, Alabama Administrative Code: http://www.alsde.edu/sec/tc/Lists/Publications/AllItems.aspx
[2] Educational Testing Service, Alabama State-approved Teacher Education Program Approach, Tests Required for All Teaching Fields: http://www.ets.org/praxis/al/al_teacher_ed/
[3] Alabama State Department of Education, Teacher Certification, Certificate Renewal of Professional Educator Certificates: http://www.alsde.edu/sec/tc/Lists/Publications/AllItems.aspx
[4] Alabama State Department of Education (personal communication)
[5] Alabama Learning Exchange, Welcome to the Alabama Learning Exchange: http://alex.state.al.us/showpage.php?lnk=welcome
[6] Alabama State Department of Education, Instructional Services, Textbooks: Textbooks by Subject, Science, State Adopted Textbooks for Science, 2006-12: http://www.alsde.edu/sec/sct/Pages/textbooksbysubject-all.aspx
[7] Alabama State Department of Education, Instructional Services, Standards/COS, Science, 2005 Alabama Course of Study: Science: http://www.alsde.edu/sec/sct/Pages/cos-all.aspx?tab=All%20Stds/COS
[8] Alabama State Department of Education, Graduation Information, Alabama High School Graduation Requirements: http://www.alsde.edu/sec/sct/Graduation%20Information/ALABAMA%20HIGH%20SCHOOL%20GRADUATION%20REQUIREMENTS.pdf
[9] Alabama State Department of Education, Student Assessment, ACT Aspire Information: http://www.alsde.edu/sec/sa/Pages/assessmentdetails.aspx?AssessmentName=ACT%20Aspire&navtext=ACT%20Aspire
[10] Alabama State Department of Education, Communications, All Education Report Cards, Alabama Education Report Card, 2012-2013, A Year in Review: http://www.alsde.edu/sec/comm/Pages/educationreportcard-all.aspx
[11] Alabama State Department of Education, Accountability Reporting System: http://www03.alsde.edu/Accountability/Accountability.asp
[12] U.S. Dept. of Education, Institute of Education Sciences, National Center for Education Statistics, Trends in International Mathematics and Science Study (TIMSS), State and District Participation in TIMSS: https://nces.ed.gov/TIMSS/benchmark.asp
[13] Alabama State Department of Education, Testing, Student Assessment Timeline: http://www.alsde.edu/sec/sa/Testing/Student%20Assessment%20Timeline%20Revised%20September%202014.pdf
[14] The ACT, Content Covered by the ACT Science Test: http://www.actstudent.org/testprep/descriptions/scicontent.html
[15] Alabama State Department of Education, Student Assessment, AL High School Graduation Exam (AHSGE): http://www.alsde.edu/sec/sa/Pages/assessmentdetails.aspx?AssessmentName=AHSGE&navtext=AHSGE
[16] Interpretive Guide for ACT Aspire Summative Reports: http://actaspire.avocet.pearson.com/actaspire/home#5622