

## Zimmerman Content Advisor Feedback

For all courses, appreciate the clear rationales for addition of new standards and clarification of existing concepts.

### **Aquatic Science –**

The SEs align with the KS statements but the KS statements could be reordered to progress more smoothly. Suggest reordering to: KS5 (properties of water), KS6 (interactions of Earth systems), KS11 (geological phenomena and fluid dynamics), KS12 (types of aquatic ecosystems), KS7 (interdependence), KS9 (role of cycles), KS13 (environmental adaptations), KS8 (study of aquatic environment), KS10 (freshwater), KS14 (human activities). Renumbering would be necessary to follow this progression of science concepts.

KS13 – “student knows environmental adaptations” is low DOK and all SEs are comparative – can the work group reexamine these? What is the desired student outcome/understanding here?

This course builds well upon previous coursework in biology, chemistry, and earth systems in a way that shows the interconnectedness of these disciplines in relevant, applicable ways.

### **Astronomy –**

Addition and separation of SEs to better align with current astronomical research and hypotheses is good. Part of the course builds on the basic understanding of space science from MS but now adds rigor and depth to those concepts. Rationale for revisions consider both CCRS and K-12 Framework student expectations.

I do not have sufficient background in this discipline to offer critically thorough review of all course TEKS in depth but noted a couple of potential duplications. 6A and 8A both include prediction of moonrise and moonset and 7D and 14A both address our solar system’s location within the Milky Way – is the intended conceptual understanding and application of skills for these SEs different? Suggest intended spiraling or reinforcement of conceptual understanding be clarified in the TEKS guides for teachers.

### **Environmental Systems –**

Like addition of language pertaining to local ecosystems in KS6 SE D-F as this encourages field exploration and partnerships within the community.

10C – examples of pollutants grammatically confusing – thermal, noise, and light pollution are types of pollution but would not classify them as pollutants as they are not substances but rather forms of energy; could be rewritten to “effects of pollutants such as chlorofluorocarbons, greenhouse gases, metallic ions, heavy metals, aerosols, pesticide runoff, nuclear waste, and thermal, noise, and light pollution”

10E – distinguish between causes and effects of global warming and ozone depletion including the ~~causes~~, the chemicals involved.” – should strike the second causes

- **Strongly recommend** separating causes, effects, and implications of global warming from SE 10E (ozone depletion) as it is a *significant current* environmental concern and should be thoroughly addressed in the standards for any environmental science course. Additionally, natural global climate change is addressed in a separate SE 9E so human induced global climate change should receive parallel instructional focus.

11C – suggest adding sustainability – perhaps “advantages and disadvantages of “going green” and consumer sustainability choices such as...” OR addition of a SE – “research and evaluate individual and commercial sustainability choices and practices on local, national, and global economies and ecosystems” to align to current environmental consideration and provide foundation for 12E

12A – suggest change “farming” to “different methods of food production” to broaden scope for student evaluation and better align with CCRS XE3

Like the intention of 12B to emphasize non-commercial impact and responsibility but habitat destruction is not really an individual impact and the SE is worded confusingly – suggest “evaluate the economic and environmental impact of non-commercial actions such as overbuilding, small-scale habitat destruction, poaching, and improper waste disposal”

Addition of 12E to foster critical thinking about balancing economic and environmental concerns is fundamentally relevant to an environmental systems course – fully agree with this addition.

### **Specialized Topics in Science –**

New HS course gives flexibility to districts to meet student interests and needs for scientific study. The scientific practices recommended as TEKS align with a multitude of sub-disciplines or topics of study.

### **Earth Systems –**

Agree with work group deletion of astronomy TEKS to avoid duplication with Astronomy course.

9B – previous SEs B-D were combined with rationale to reduce time to teach and consolidate content – agree that B and C cover similar topics relating to Earth’s structure and evidence used and are appropriately combined but suggest D be reevaluated for content potentially missed related to Earth’s magnetic field

11A & B – good addition of thermohaline circulation - important for student knowledge

12D – rationale for deletion of former 13B and 15B include merging concepts with this SE but both previous SEs specify student use of evidence from ice cores, glacial striations, and fossils for analysis of climate change – new SE uses term paleoclimate data but these specific evidence may need to be specified for teachers

12E – unclear of intended student outcome as differentiated from 12F

13C – unclear which biological processes have caused major changes to the carbon cycle

Deleted 15E – rationale that this SE is combined with 12A for new 13D but unclear the analysis of change in ocean temperature on algal growth, coral bleaching, ocean acidification, etc. – suggest reevaluate wording to ensure no loss of important concepts