

# VEXAG GOALS, OBJECTIVES, AND INVESTIGATIONS DOCUMENT

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# From last VEXAG to LPSC

- ▣ Last revision was a few years ago. Primary complaint – not clear enough to nonspecialists.
- ▣ Group discussion at last VEXAG meeting in November. Initial mandate to retain general structure with modest content changes. Goals loosely track Decadal Survey themes.
- ▣ Task force assigned to jump start revision process by taking central GOI table and reworking based on November input.
- ▣ Presented first revision at LPSC in March.

# The Primary Changes by LPSC

- ▣ Modest reordering and reorganization
- ▣ Punch it up
  - Objectives are now questions
  - Directly mention things that are important
- ▣ Make sure each investigation has statement indicating why it is important for achieving the overall objective.
- ▣ Rename third goal to “Habitability and Climate Evolution” from “Climate Change and the Future of Earth”.

## **1. Origin and Evolution**

1. How did Venus form and initially evolve?
2. Were interior dynamics different in the past?
3. Was the Venus surface environment different in the past?

## **2. Venus as a Terrestrial Planet**

1. What is the chemistry and mineralogy of the crust and what does it tell us about the history of Venus?
2. What is the nature and rate of current and past volcanic and tectonic activity?
3. What is the planet's current interior like?
4. How does Venus's atmosphere work?

## **3. Habitability and Climate Evolution**

1. What is the role of the Venus greenhouse in producing the planet's current climate?
2. Did Venus ever have surface water?
3. Characterize how the interior, surface, and atmosphere interact.

# After LPSC Town Hall

- ▣ Primary comments were that 1) still a lot of redundancy, with unclear flowdown, and 2) still not capturing the big ideas.
- ▣ A key problem with “past, present, future” structure of table was that in geoscience investigations the same data is used to understand current and past processes. Also, only superficial tracking of Decadal Survey.
- ▣ Reorganized table by science discipline, paralleling MEPAG approach.

# New GOI Table

## 1. Atmosphere and Climate

1. Atmospheric formation and evolution
2. Energy balance, super-rotation, and greenhouse
3. Clouds and lightning

## 2. Surface and Interior

1. Heat release and resurfacing
2. Internal differentiation

## 3. Interior-surface-atmosphere interactions

1. Liquid water
2. Interior-surface-atmosphere coupling

# The Goals Document

- ▣ Introduction
  - Central theme – divergent twin from Earth
  - Linkage to Decadal themes
  - Introduce and describe table
- ▣ GOI Table
- ▣ Descriptive text of Goals and Objectives
  - Introduce Goal
  - Rationale for each Objective with linkage [in brackets] to Investigations
- ▣ Basic planetary processes
- ▣ Link to other VEXAG documents
- ▣ Document history