The philosophy behind NASA’s New Frontiers program is to solicit proposals for an entire mission, put together by a team comprised of people from universities, NASA centers, Federally Funded Research and Development Centers, industry, and small businesses, led by a Principal Investigator (PI). The PI develops the scientific objectives and instrument payload. The team brings together the skills and expertise needed to carry out a mission from concept development through data analysis. The PI is responsible for assuring that cost, schedule and performance objectives are met.

NASA is committed to the principles of open competition and merit review as a key to excellence. Proposals are chosen through an extensive competitive peer review process. Proposals require careful tradeoffs between science and risk to produce investigations with the highest possible science value for the price.

For this assignment, you are on the step-2 review panel for NASA’s New Frontiers 4 competition. The step-1 review panel before you decided that NASA will choose between two very different missions: the Comet Astrobiology Exploration Sample Return (CAESAR) and Dragonfly. CAESAR is a sample return mission that would bring > 100 g of comet 67/P Churyumov Gareasenko back to Earth for Study. Dragonfly would send a radioactive thermal generator (RTG) rotorcraft to explore Saturn’s moon Titan.

Both missions will fit in under the cost cap of 850 million USD (excluding the launch vehicle and Phase E operations cost), leaving science return and technical risk as the remaining criteria from which to select which mission will fly. Your assignment is to pick among these mission architectures and write a summary justifying your selection to NASA. Using the information given to you in lecture and posted on the class website, in addition to any outside material you can find, describe which
mission you would select in 500-1000 words. Your decision must be justified using one or more of the following criteria:

- Science (which mission’s science is more important and why)
- Risk (are science objectives risky or easy to accomplish with the spacecraft)
- Technological Readiness (are the technologies required to complete the mission ready for flight or do they require significant development)

For the purposes of this assignment, you must choose only one mission. As you know, Dragonfly was ultimately selected in NF4. The decisions was, as discussed in class, complex and could have easily gone the other way. Do not be swayed by the mission that was selected by NASA when you write your review. Good luck!