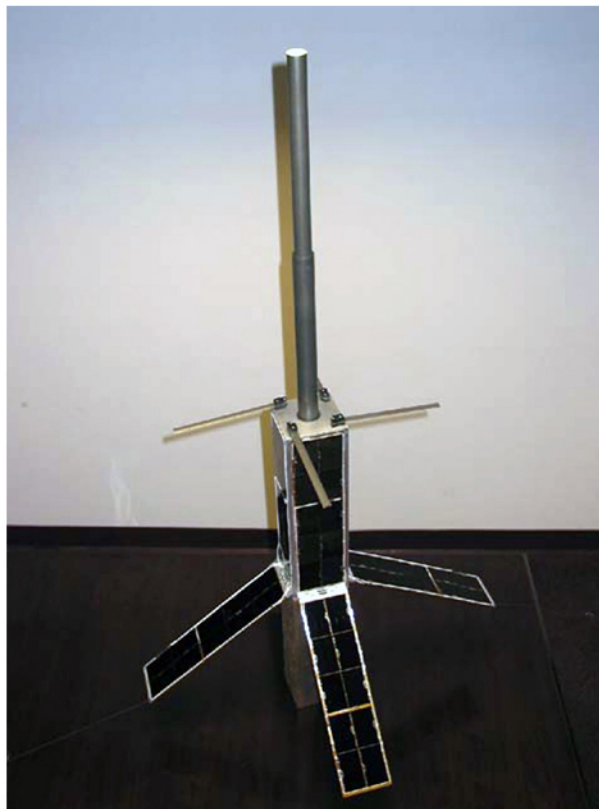


QuakeSat



QuakeSat is a research nanosatellite, a collaboration of SSDL (Space Systems Development Laboratory) at Stanford University, Stanford, CA, and of the QuakeFinder Team of Palo Alto, CA. The overall objective is earthquake signature detection.

QuakeSat's primary scientific mission is to detect, record, and downlink ELF (Extremely Low Frequency) magnetic signal data, which may lead to groundbreaking techniques to predict earthquake activity. According to theory, fracturing bedrock along the fault lines creates the ELF magnetic waves. These signatures radiate from the earthquake hypocenter region (several tens of km²), through the Earth (5-80 km), through the atmosphere to the ionosphere (100-200 km), and are propagated up the Earth's magnetic field lines to satellite altitude.

QuakeSat measures slightly more than 10 cm x 10 cm x 34 cm (stacking of three CubeSat payloads) with a total mass of about 4.5 kg. The outer structure of QuakeSat (consisting of 6061 aluminum) fits inside the P-POD launch tube.

Launch: The first multiple launch CubeSat mission, involving some 6 Cubesats as secondary payloads, and a primary commercial payload, took place June 30, 2003. The launch vehicle was Rockot KS of Eurockot Launch Services (Bremen, Germany) from the launch site Plesetsk, Russia with the following secondary payloads:

- XI (X-factor Investigator) of the University of Tokyo, Japan
- CUTE-I of Tokyo Institute of Technology (TITech), Tokyo, Japan
- CanX-1 of the University of Toronto, Toronto, Canada
- AAUSat of Aalborg University, Aalborg, Denmark
- DTUSat of the Technical University of Denmark, Lyngby, Denmark
- QuakeSat of Stanford University, Stanford, CA, USA (3U CubeSat with a total mass of about 4.5 kg)

QuakeSat did detect ELF bursts over 8 earthquake areas in 12 months. These bursts may be unique to earthquake areas, but it is important to collect more data using different and more sensitive instruments such as those on DEMETER to confirm these findings.

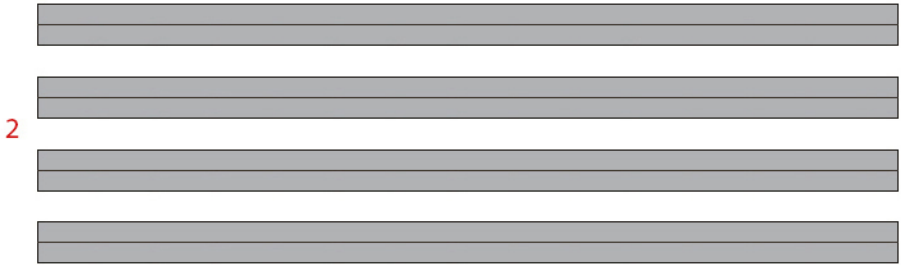
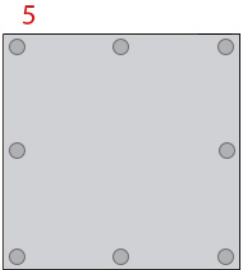
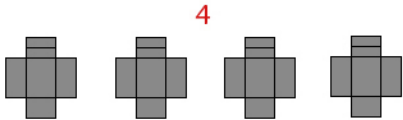
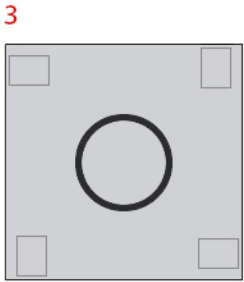
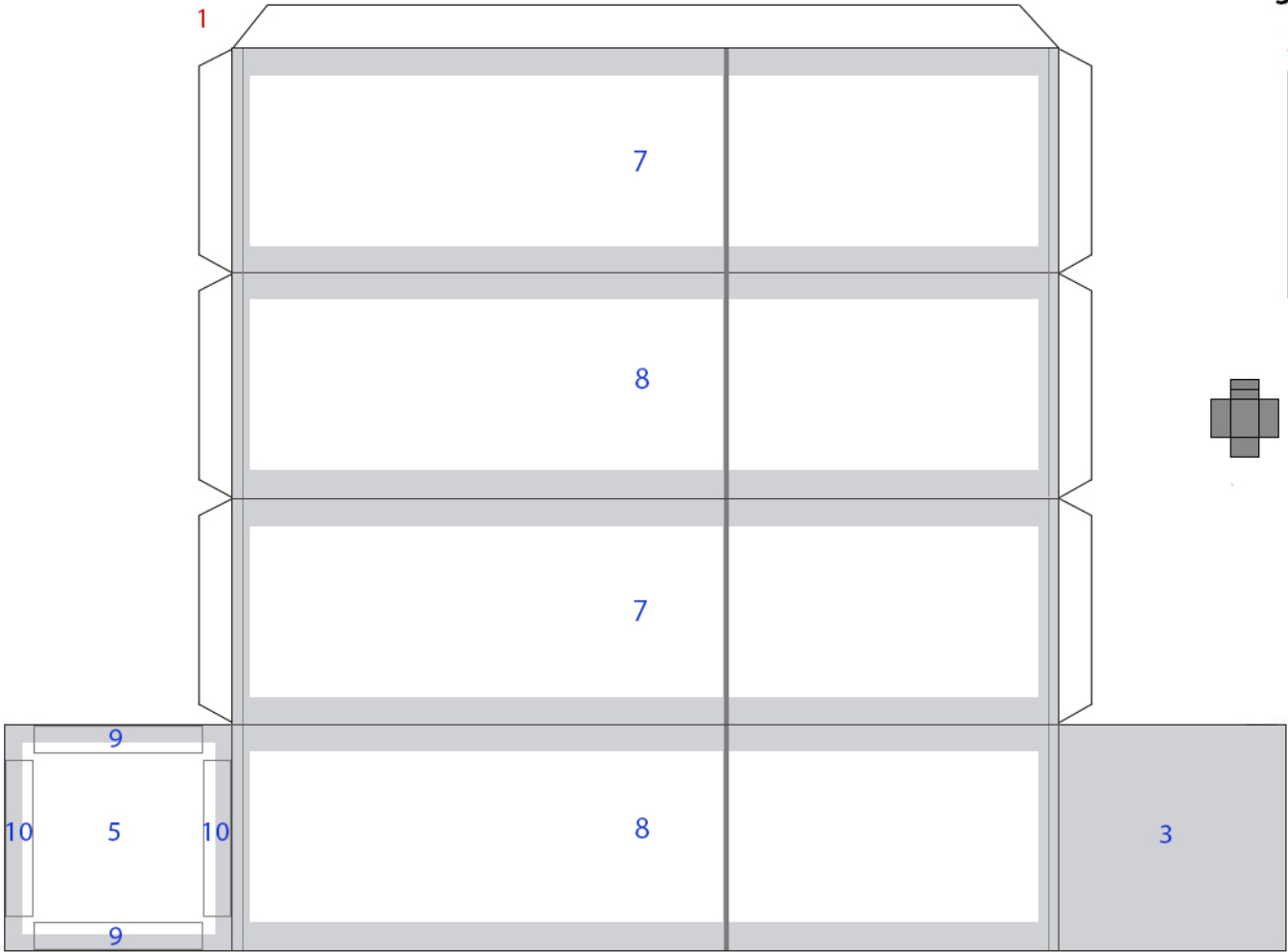
Earthquake signals: Broadband signals were seen immediately following the August 21 2003, 7.2M South Island NZ quake, the December 22, 2003 6.5M San Simeon CA quake, and the December 1, 2003 6.0M Kazakhstan-Xinjiang Border Region earthquake.

Preliminary results of the satellite collections showed unique signals prior to and after the San Simeon quake, as well as several other large world-wide quakes. Ground collections were inconclusive since the closest 4 sensors of the available 35 sensors were located more than 60 km and 2 parallel fault traces away from the San Simeon quake epicenter.

QuakeSat was designed to fly for one year, but the mission ended up lasting for 1 ½ years to the end of December 2004.



Color all edges light grey.

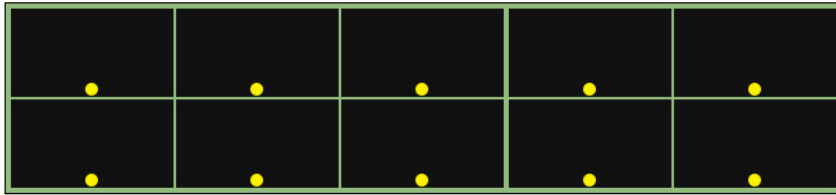
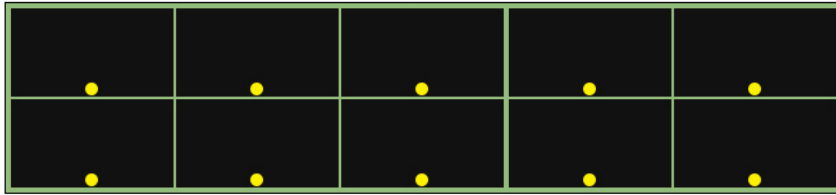


Score the middle line, fold-glue in half

7

Glue to two layers of cardstock

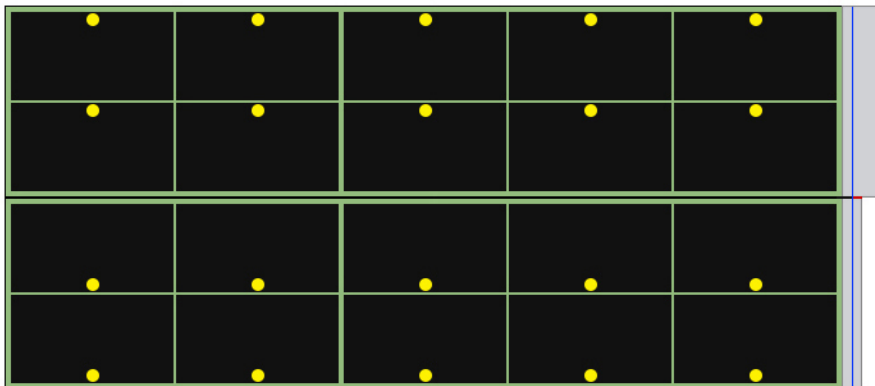
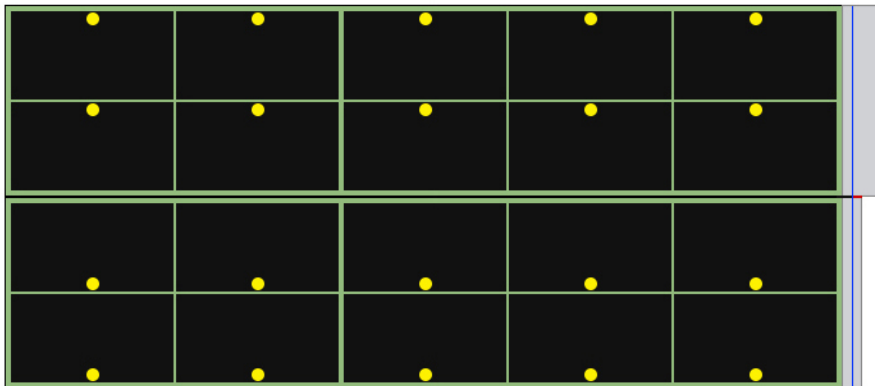
8



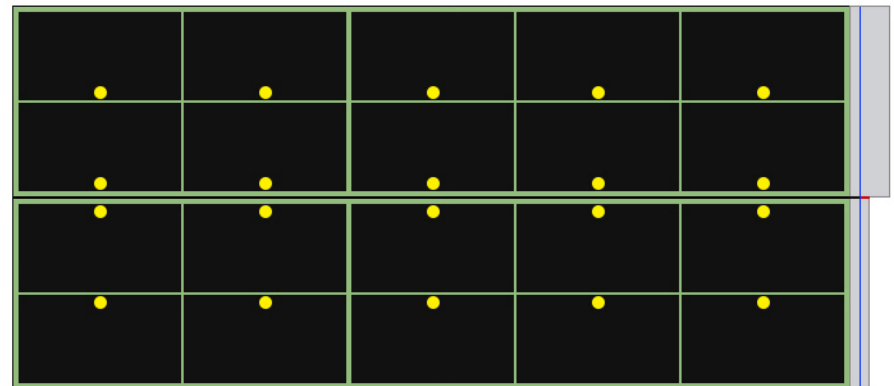
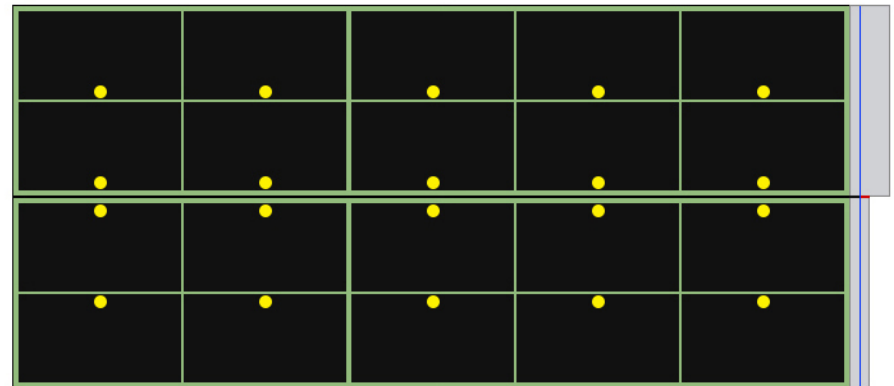
Score the middle line and the large and small tabs. Cut the SHORT RED LINE to separate the two tabs.

Both tabs are VALLEY FOLDED **at the blue line**. Fold-glue the solar panels in half and glue together, **but not the tabs**.

9



10



QuakeSat

Magnetometer

You can build the model two different configurations; with the Magnetometer contracted or extended.

Contracted - use parts m1 - m2 and m3-m4.

Extended - use parts m5-m6 and m7-m8.

See instructions

m1



m3



m2



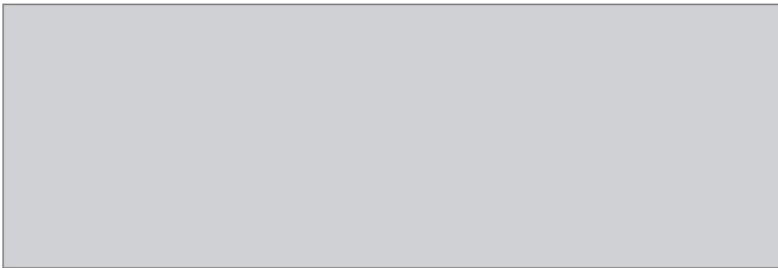
m4



m6



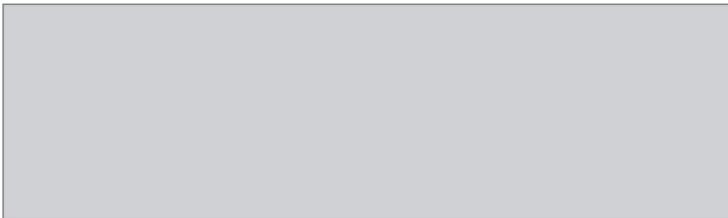
m5



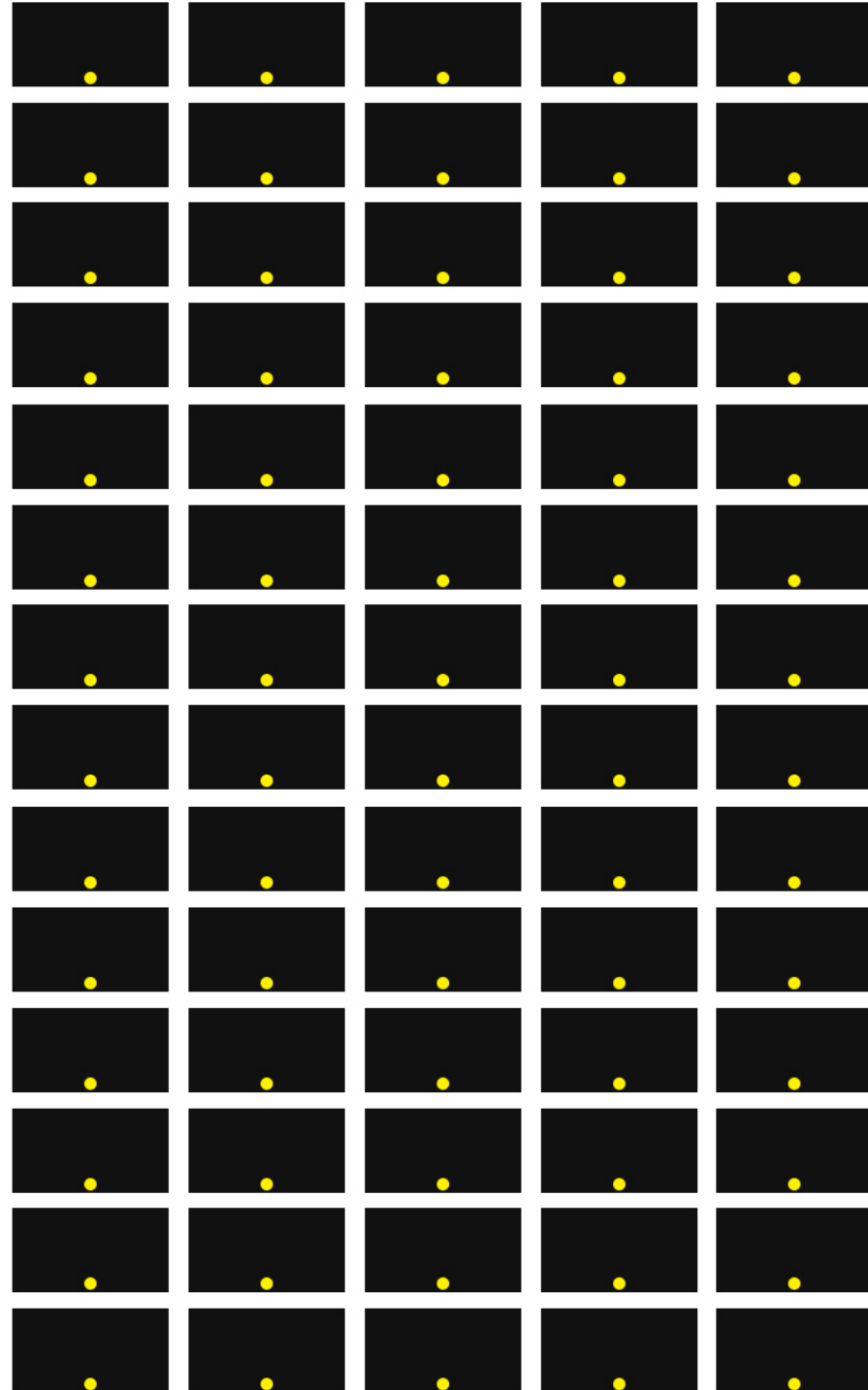
m8



m7



Optional Detail parts

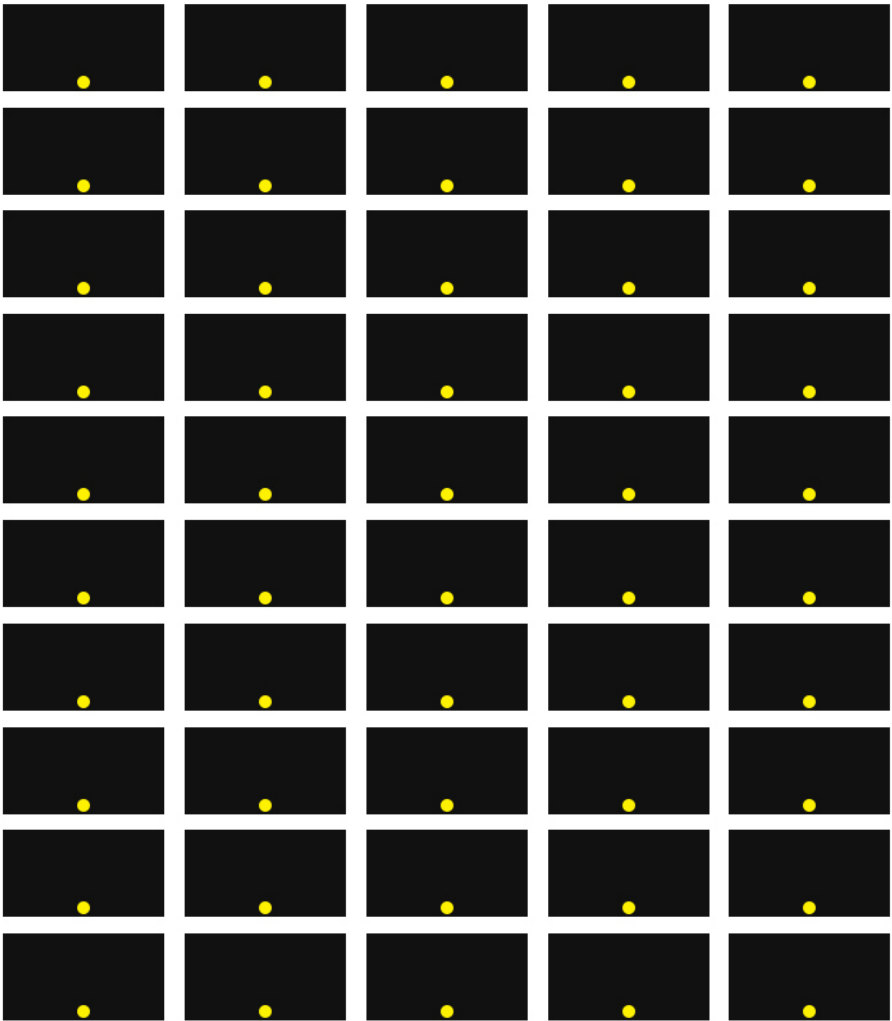


Zach's



PaperSat Designs
Spacecraft paper Models

Optional Detail parts



Extras