

- Disable interrupts
- Get wifi working with no resets
- Save version 1.1
- Radiation event is triggering on change not falling
- Rework timer interrupts into tickers
- Check thingspeak lib revision
- Swap out esp32 module
- Change ticker0 to 100ms
- Check thingspeak webpage
- Diagnose double reset at powerup
- Save version 1.2
- Vary duty cycle when injecting to radiation event gpio pin
- Remove arduino.h and check tickers
- limit disabling of interrupts
- Add delays around ThingSpeak write
- Save version 1.3
- Restore standard thingspeak library
- Timing of location and movement sensors
- Restart user input timer in settings
- Save version 1.4
- Process sensor data
- Retry reconfig of location processing
- Change the way settings exits
- Change no buzzer timeout handling
- Diagnose timing of wifi debug messages
- Save version 1.5
- Remove mutex from interrupt
- Disable modules until no resets
- Rework sms process into states
- Swap out esp32
- \*\*\*\*\* Reflash ESP32 firmware \*\*\*\*\*
- Incorporate sms power relay
- Save version 1.6
- Build second breadboard
- Update first breadboard circuits
- Build third breadboard with minimal hw

- Location sensor to state process
- Double check stability (I2C problem persists)
- Implement watchdog reset
- Save version 1.7
- Incorporate neopixel wheel
- Redesign status colors
- Save version 1.8
- Store reset reasons
- Change neopixel library
- Increase sample rate of location sensor
- Break sms exit and location update into smaller pieces
- Change sms power down logic
- Stagger sms timing sampling and update
- Change watchdog reset function from esp.restart to noobs something
- Test new thermistors
- Shorten loop delays
- Save version 1.9
- Time keeping process
- Double check timer0 setup
- Firm up settings definition
- Standard vs developer settings
- Save version 1.10
- Set all signals at reset
- Integrate sim900 module
- \*\*\*\*\* Reflash SIM900 firmware \*\*\*\*\*
- Signal strength, reset
- Create sim card verification program
- Test a several sim cards
- Save version 1.11
- sms network verification
- powerdown verification
- sms send and receive protocol
- sim900 sleep
- Reset triggering
- Power supply

- Save version 1.12
- Modularization
- OOP
- Test air quality sensor
- Water sensor as multilevel analog input
- Save version 3.0
- Remove extra sms debug printing
- Save version 3.1
- Alarm and subsystem fault processing
- Save alarm state into flash
- Save version 3.2
- Send sms alarms and receive sms commands
- Select data for wifi update
- Save version 3.3
- Test new movement sensor inputs
- Split fast and slow sampling
- Analog input filter
- Time keeping
- Save version 3.4
- Reset sms only on not OK response
- Better scanning for sms response results
- Retry receive disable message
- Only cycle power after several registration verify failures
- Create system background process to handle sms suspension
- Add thingspeak data
- Save version 3.5
- A) Power subsystem
- Switching on all power taps with relays
- Voltage sense of 12v battery level
- Sense external power
- Switchable 5v for gas sensors using FET module
- Turn off wifi if no external power
- Measure current of each power tap
- Save version

C) 8 channel analog mux

Tie not enable to gnd

Add delay after analog mux channel selection

Direct flow to run state

Don't double setup Bluetooth begin

1 OTA

## B) Seismometer test

- 2 Enable debug messages to print through bluetooth
- 3 Allow for multiple thingspeak channels
- Fine tune water sensor thresholds
- Filter location and radiation readings
- Delay gas sensor calibration until after warm up
- Calculate units of measures
- Time and location stamp sms messages
- Save version
- Split setup and begin methods
- Final Modularization
- Save version
- Verify stability, Try adding btsart
- Perform resilience testing
- Investigate if mcu can be put to sleep while receiving radiation interrupt