

All Records

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1 Introduction

The data for the *Computers in Cardiology Challenge* in 2000, CINC2000, consists of ECG recordings of 69 patients in sleep studies¹. The challenge was to “demonstrate the efficacy of ECG-based methods for apnea detection using a large, well-characterized, and representative set of data.”

I am reworking an approach to the challenge, and I don’t understand why the ECG waveforms in some of the records are so different from the others. I suspect that lead placement caused much of the variation. However, I also suspect that a few of the records show pathologies in addition to apnea. I would like to talk to an expert about the variations.

In Section 2 I have a few notes on peculiarities I see in some of the records, and in Section 3 I have plots of a few seconds of each record.

2 Strange Records

a02 Small R wave. See Figure 5.

a10 Inverted signal? See Figure 6.

a12 Small inverted signal? See Figure 6.

a20 Double R wave. The same double pattern appears throughout the record. I think it’s a characteristic of the patient. See Figure 8.

¹The description of the challenge and the data are available at <https://archive.physionet.org/challenge/2000/>. PhysioNet has records for 70 patients, but the record named b05 is not usable.

- c02** Negative R wave? See Figure 9.
- c05** I think this is the same as c06.
- x05** S bigger than R. See Figure 11.
- x06** S bigger than R. See Figure 11.
- x11** Atypical beats. See Figure 1.
- x13** Occasional big negative spikes. See Figure 2.
- x17** Strange waveform. I think T is the biggest feature. Bad lead placement?
See Figure 13.
- x24** S bigger than R? See Figure 14.
- x26** What's happening at times 1:05:47.5, 1:05:55 and 1:05:57 in Figure 3?
- x29** Frequent short inter-beat intervals. See Figure 4.
- x33** Small inverted signal. See Figure 16.
- x34** Same as x33.

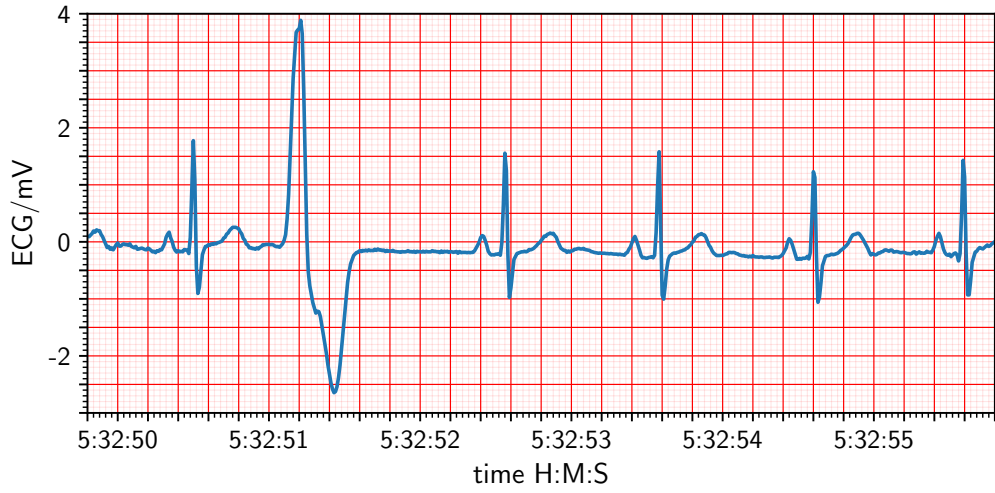


Figure 1: In record x11 the beat at 5:32:51 is strange.

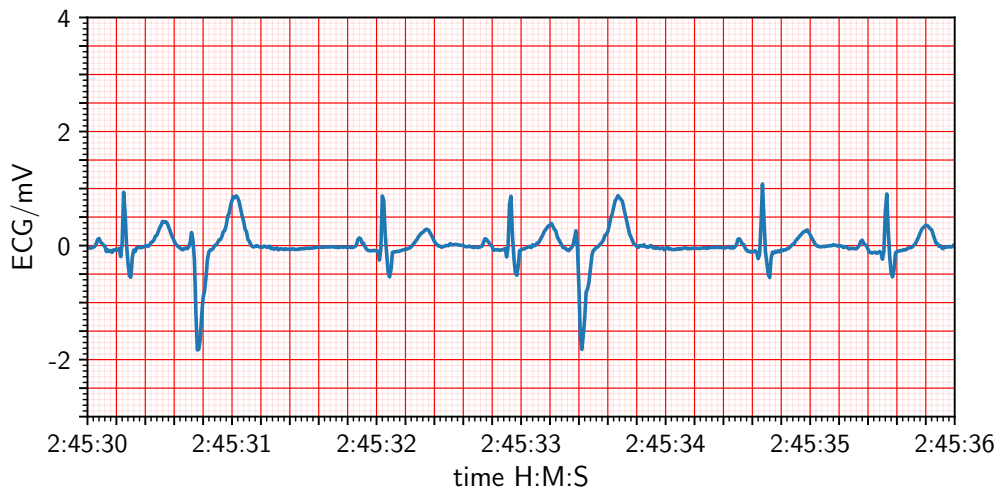


Figure 2: In record x13 there are occasional negative waves instead of R waves.

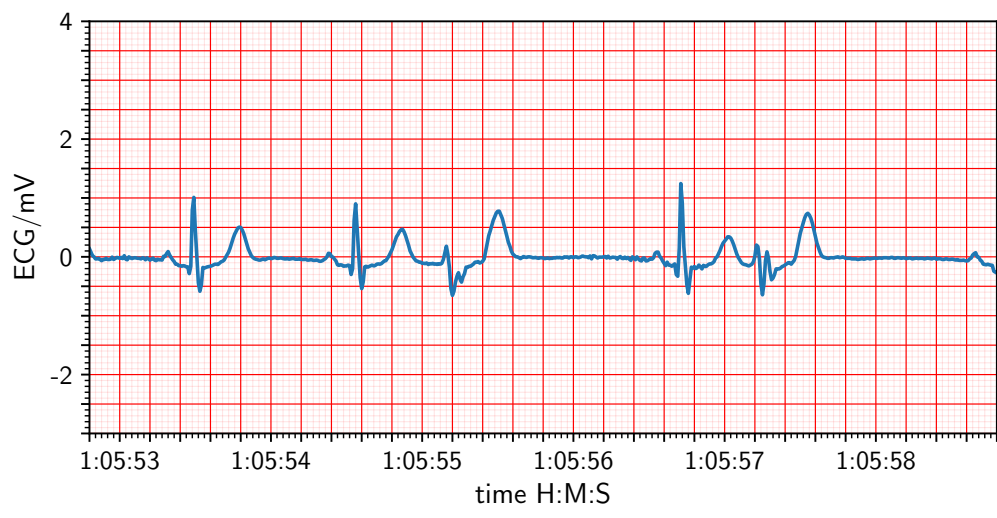
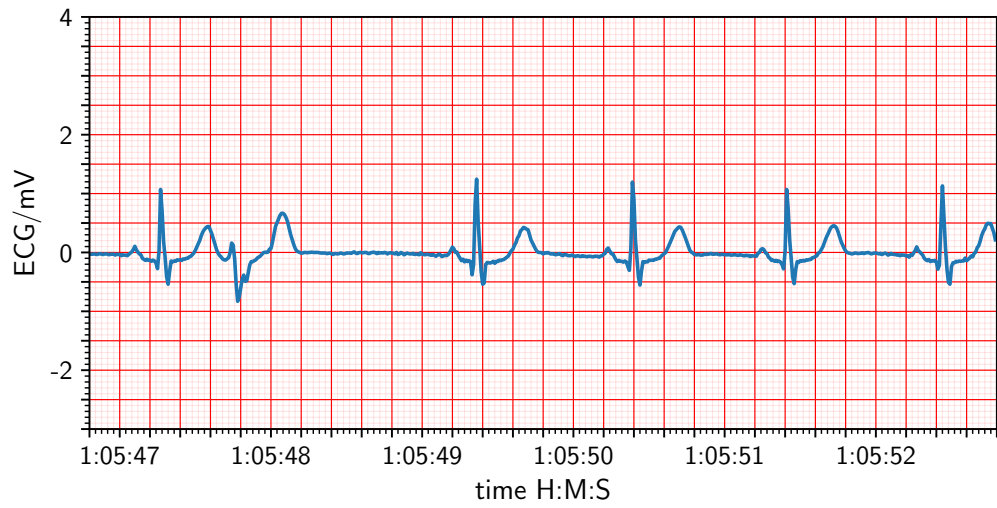


Figure 3: In record x26 there's something different at 1:05:47.5, 1:05:55 and 1:05:57.

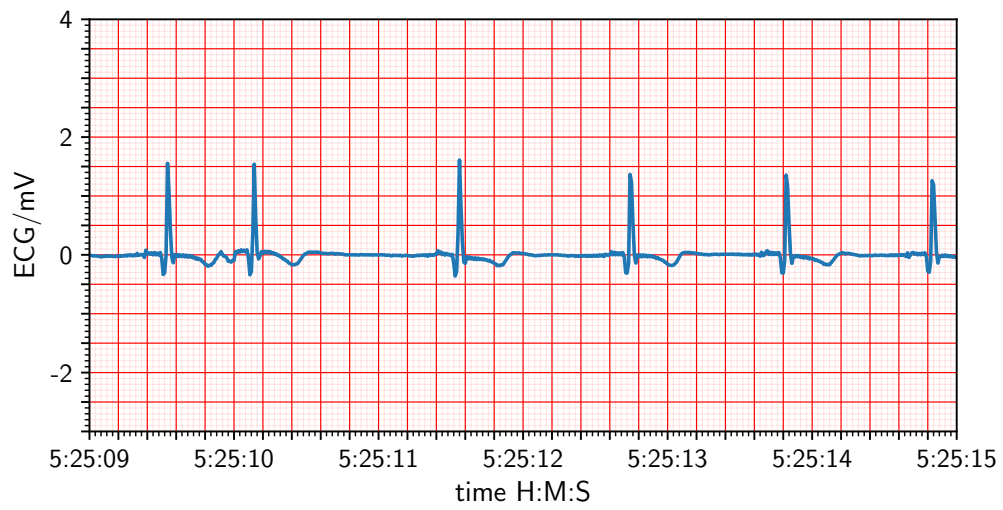
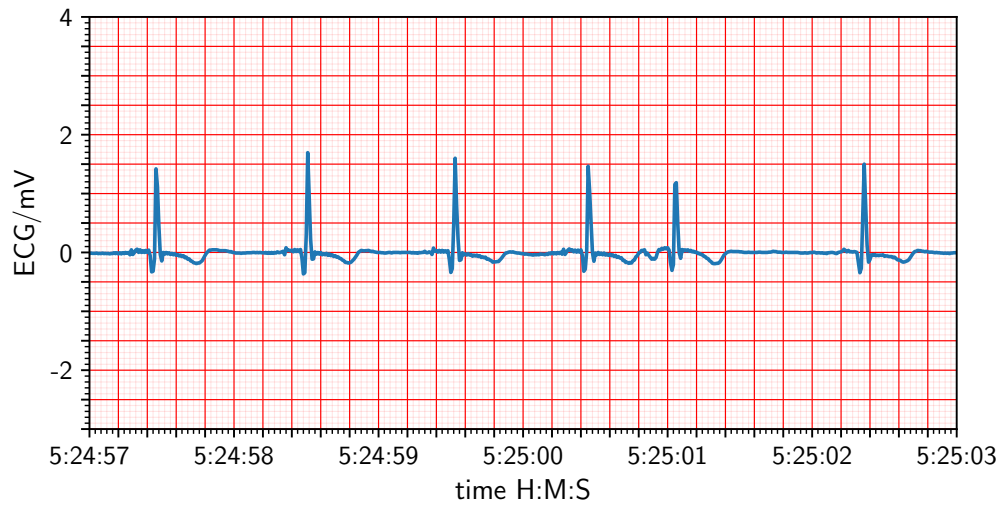


Figure 4: In record x29 there are frequent short inter-beat intervals. Here at 5:25:00.8 and 5:25:09.8

3 All Records

Here I plot a sample of each of the 69 records provided by PhysioNet for CINC2000

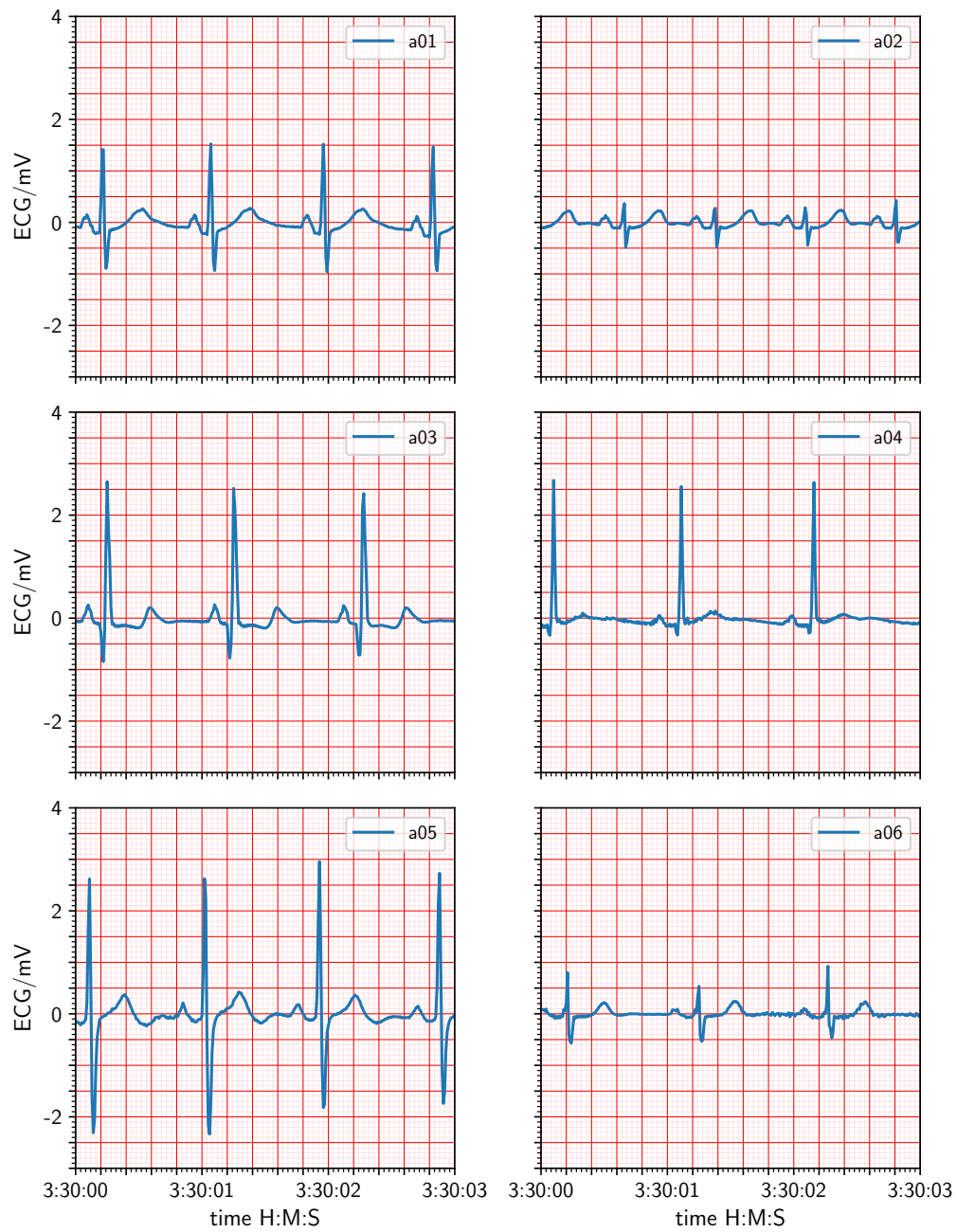


Figure 5: Subsets of data from six CINC-2000 records.

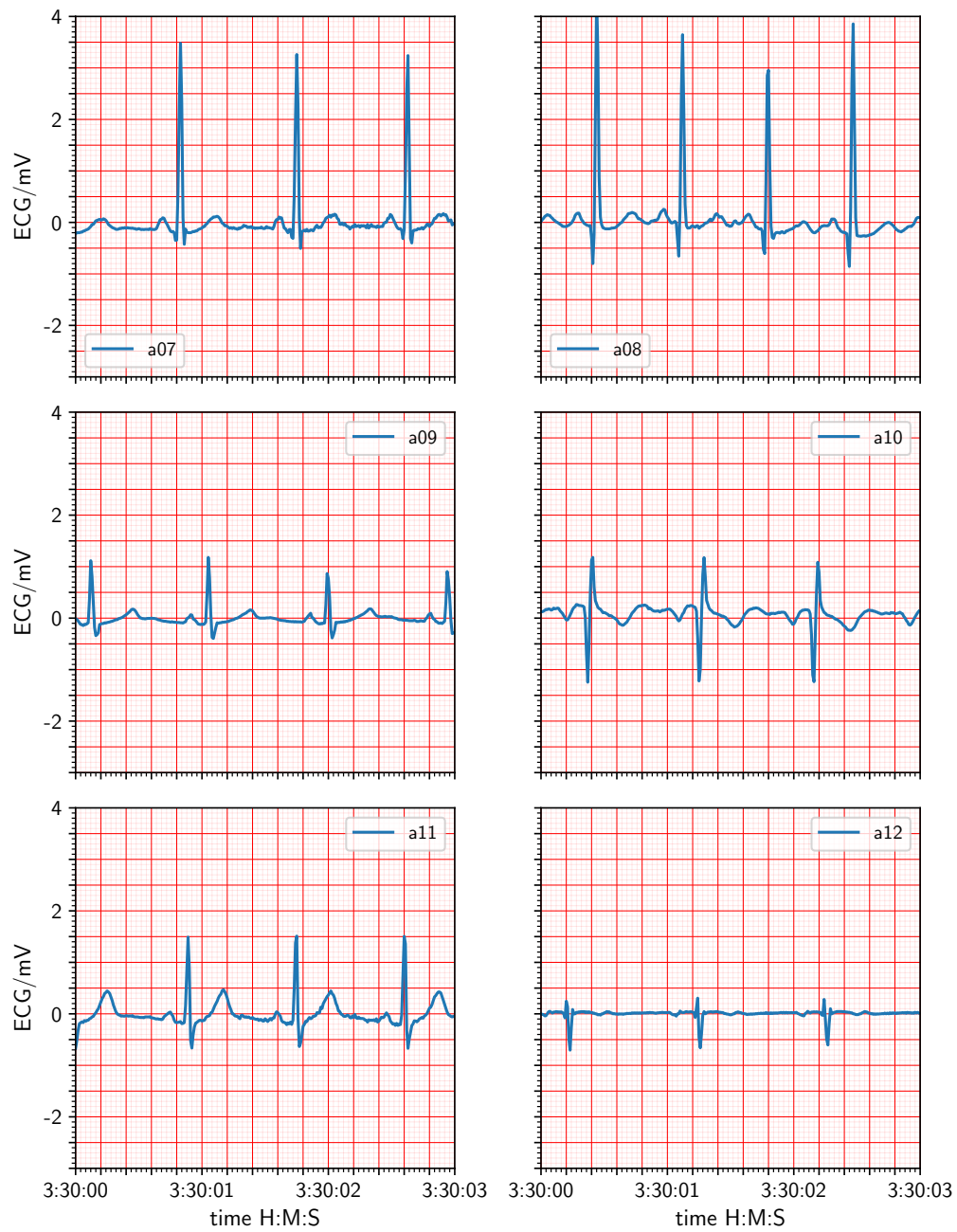


Figure 6: Subsets of data from six CINC-2000 records.

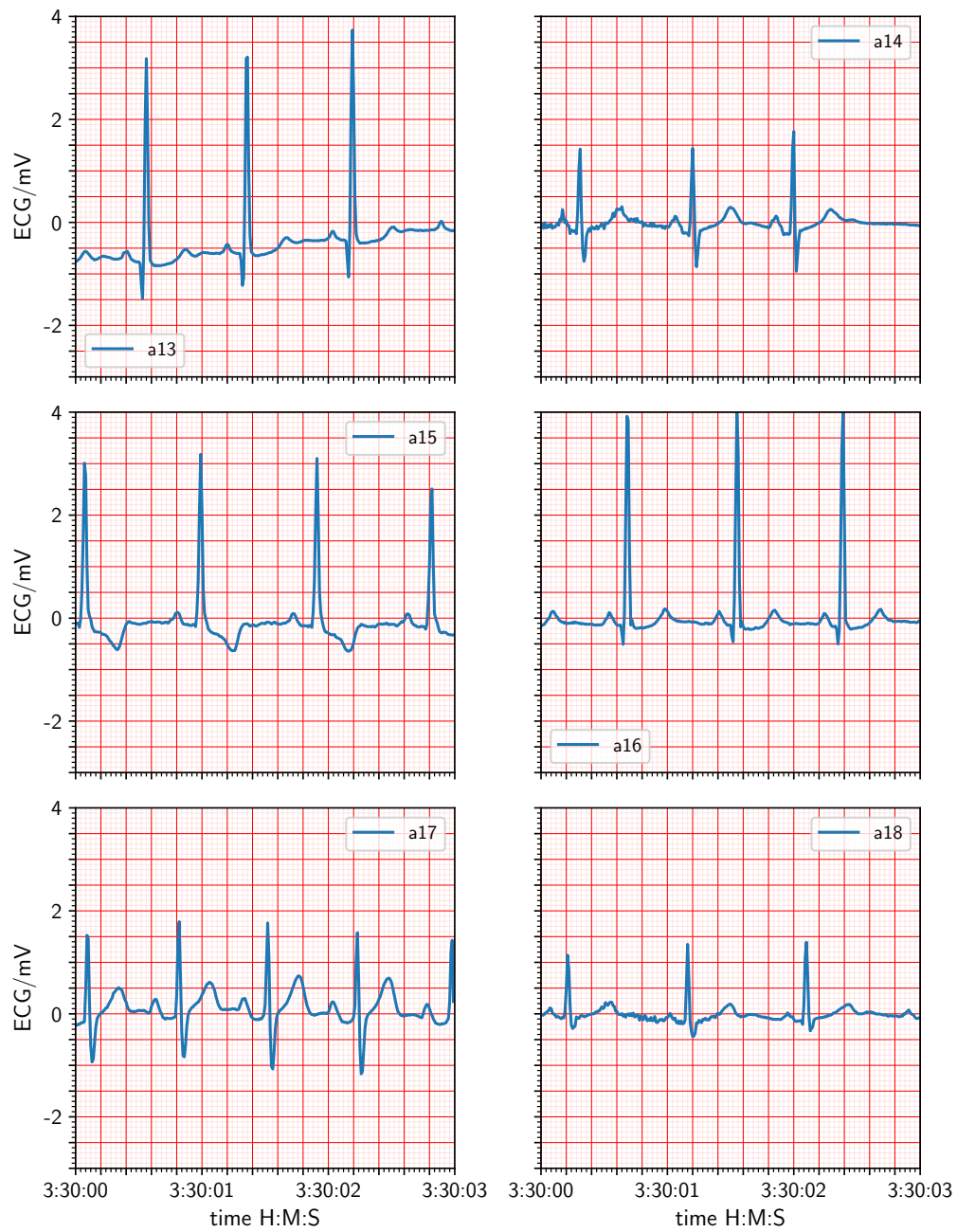


Figure 7: Subsets of data from six CINC-2000 records.

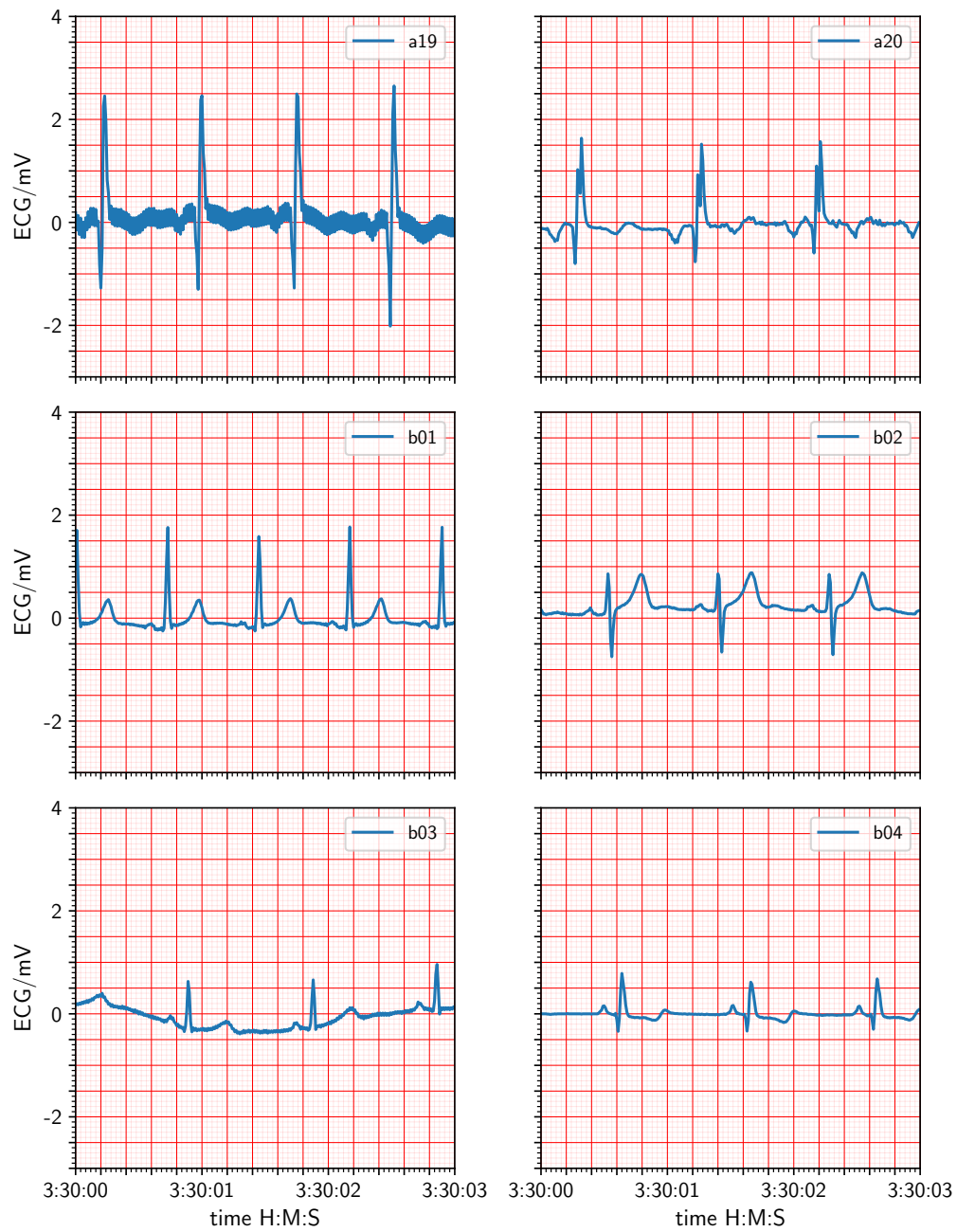


Figure 8: Subsets of data from six CINC-2000 records.

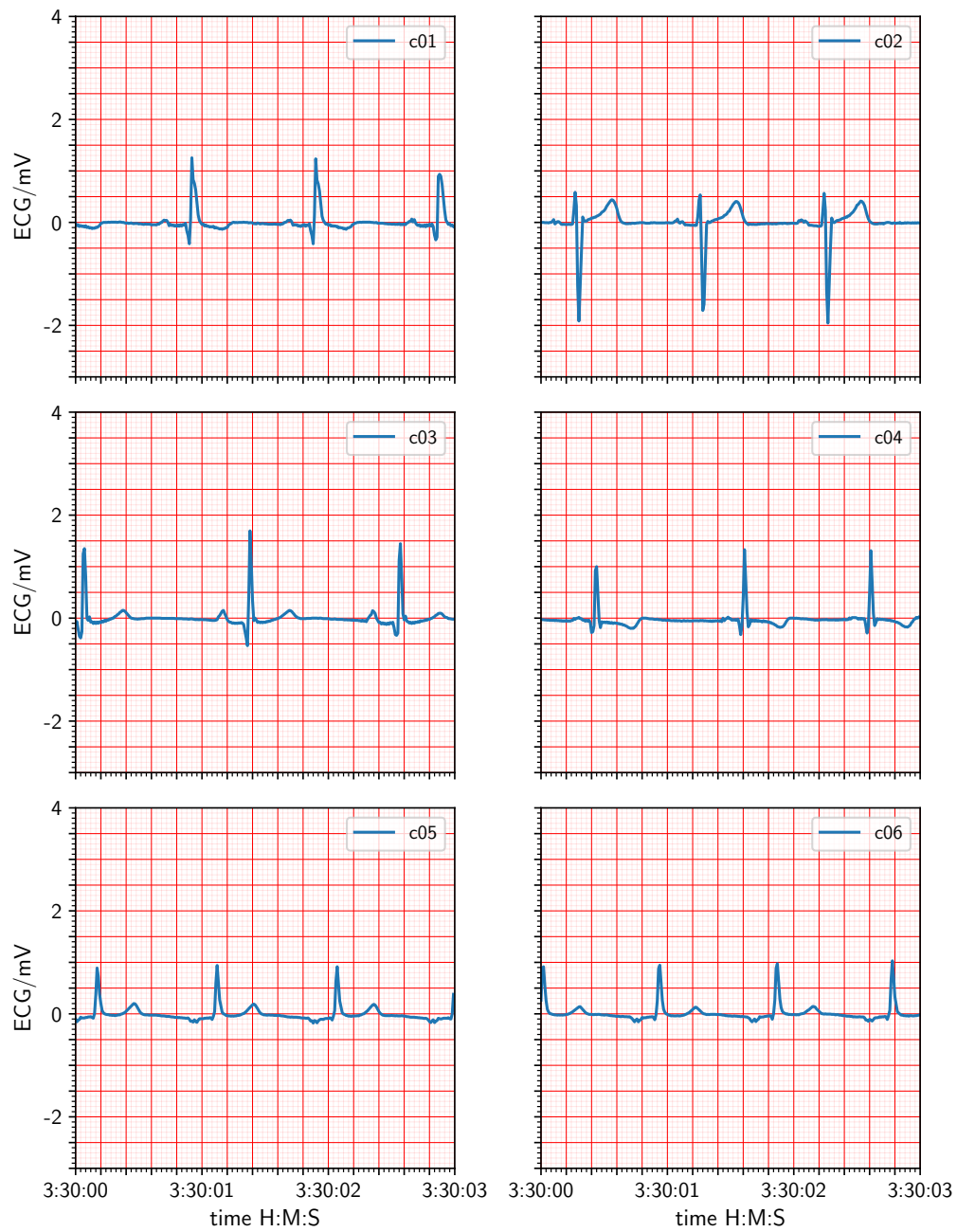


Figure 9: Subsets of data from six CINC-2000 records.

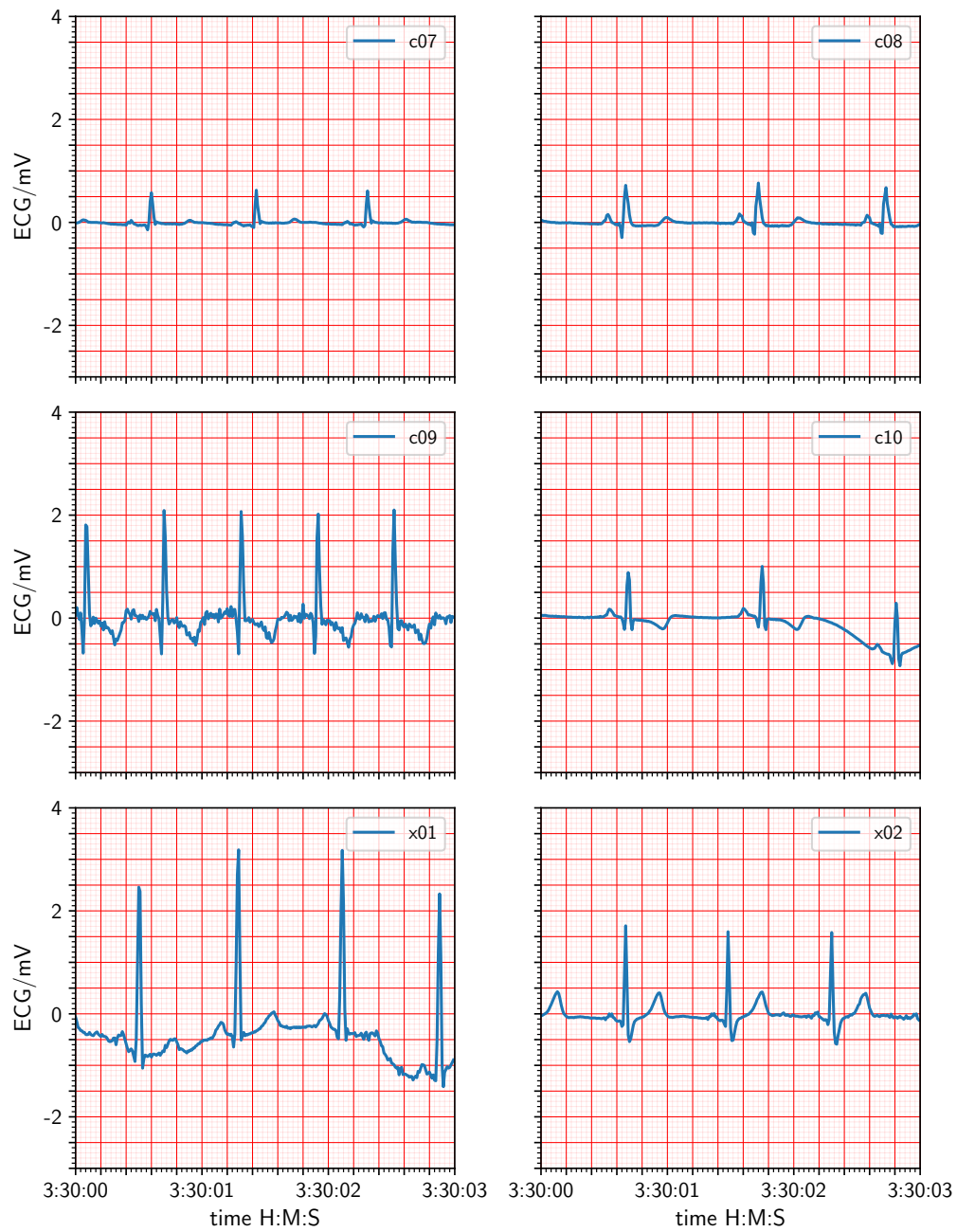


Figure 10: Subsets of data from six CINC-2000 records.

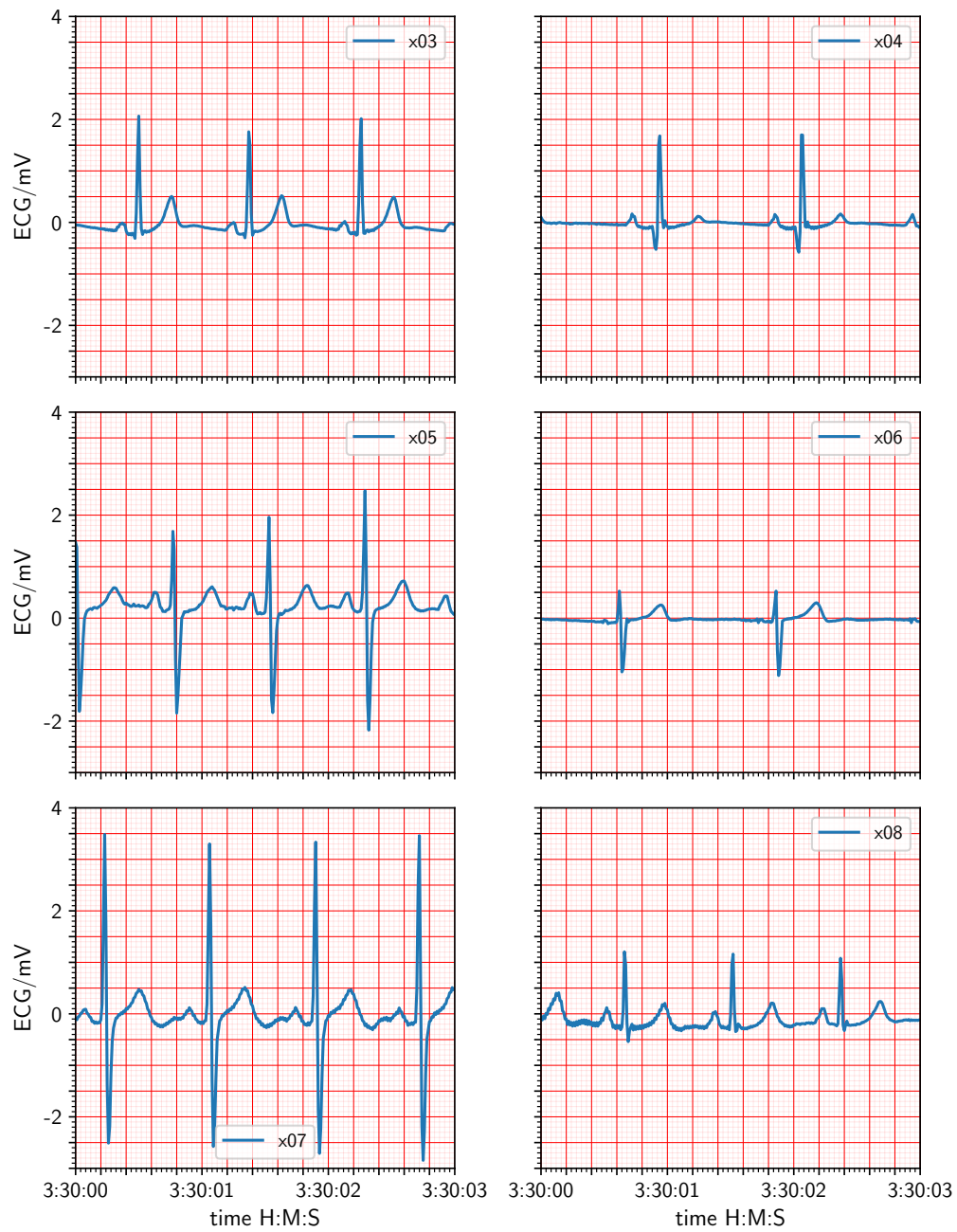


Figure 11: Subsets of data from six CINC-2000 records.

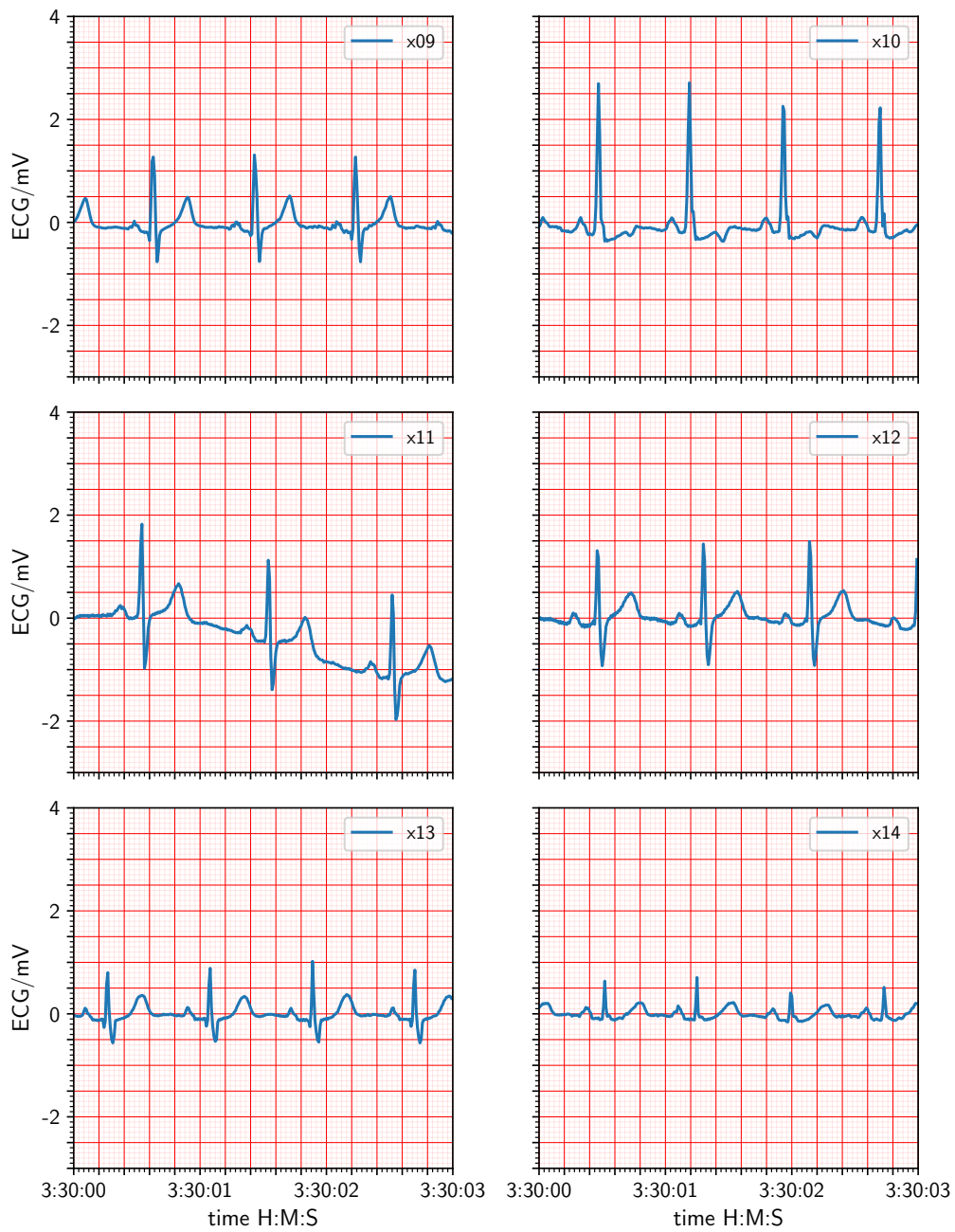


Figure 12: Subsets of data from six CINC-2000 records.

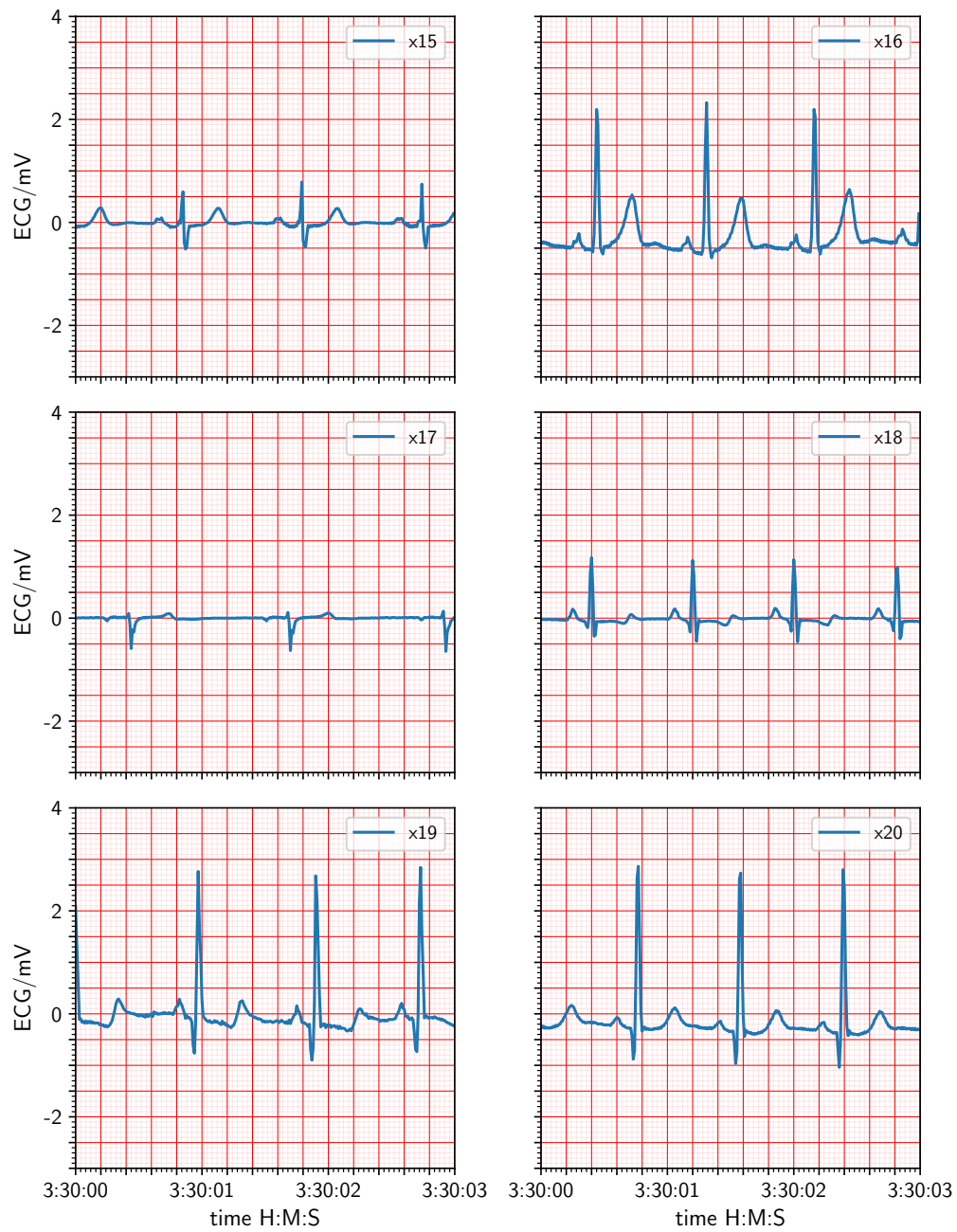


Figure 13: Subsets of data from six CINC-2000 records.

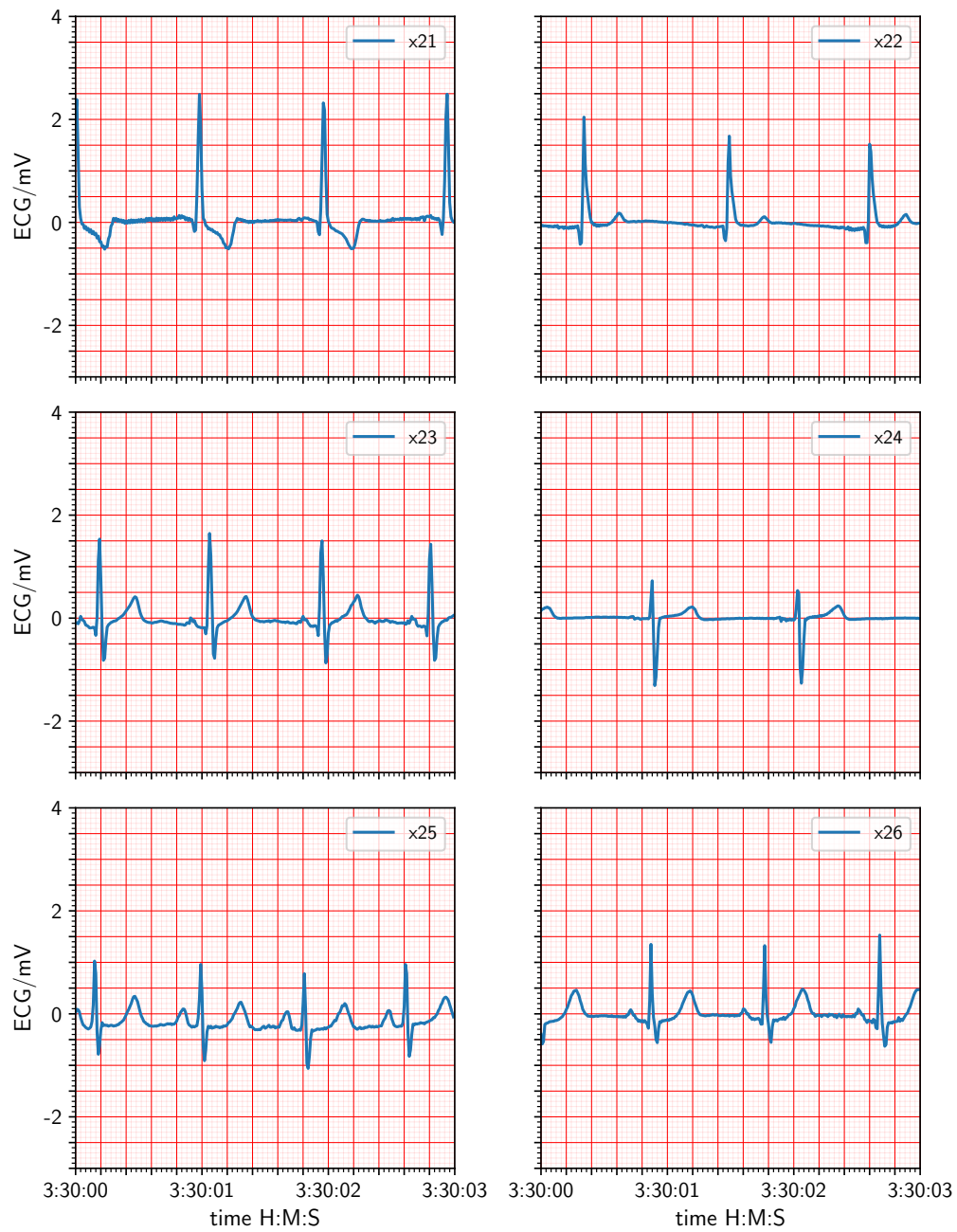


Figure 14: Subsets of data from six CINC-2000 records.

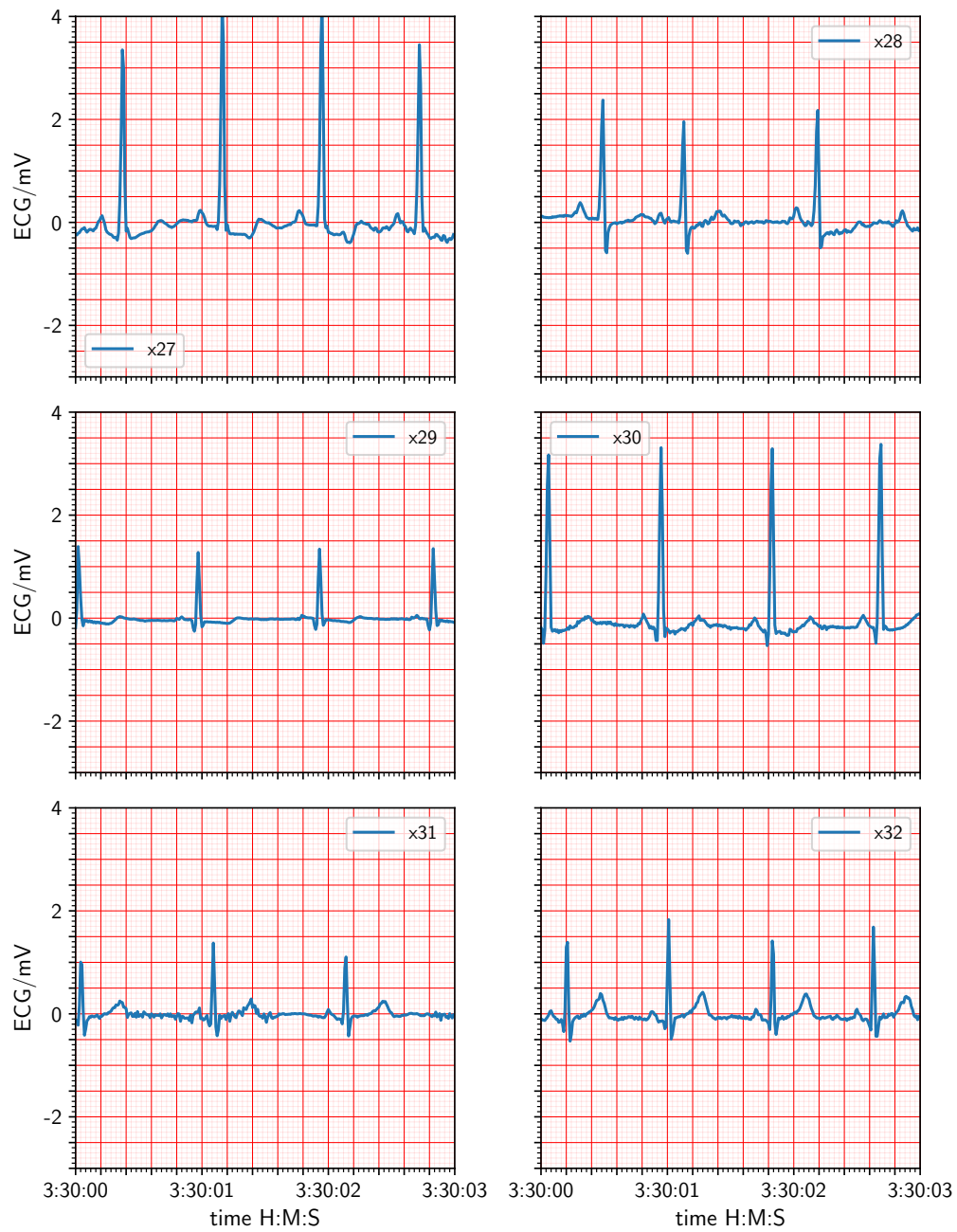


Figure 15: Subsets of data from six CINC-2000 records.

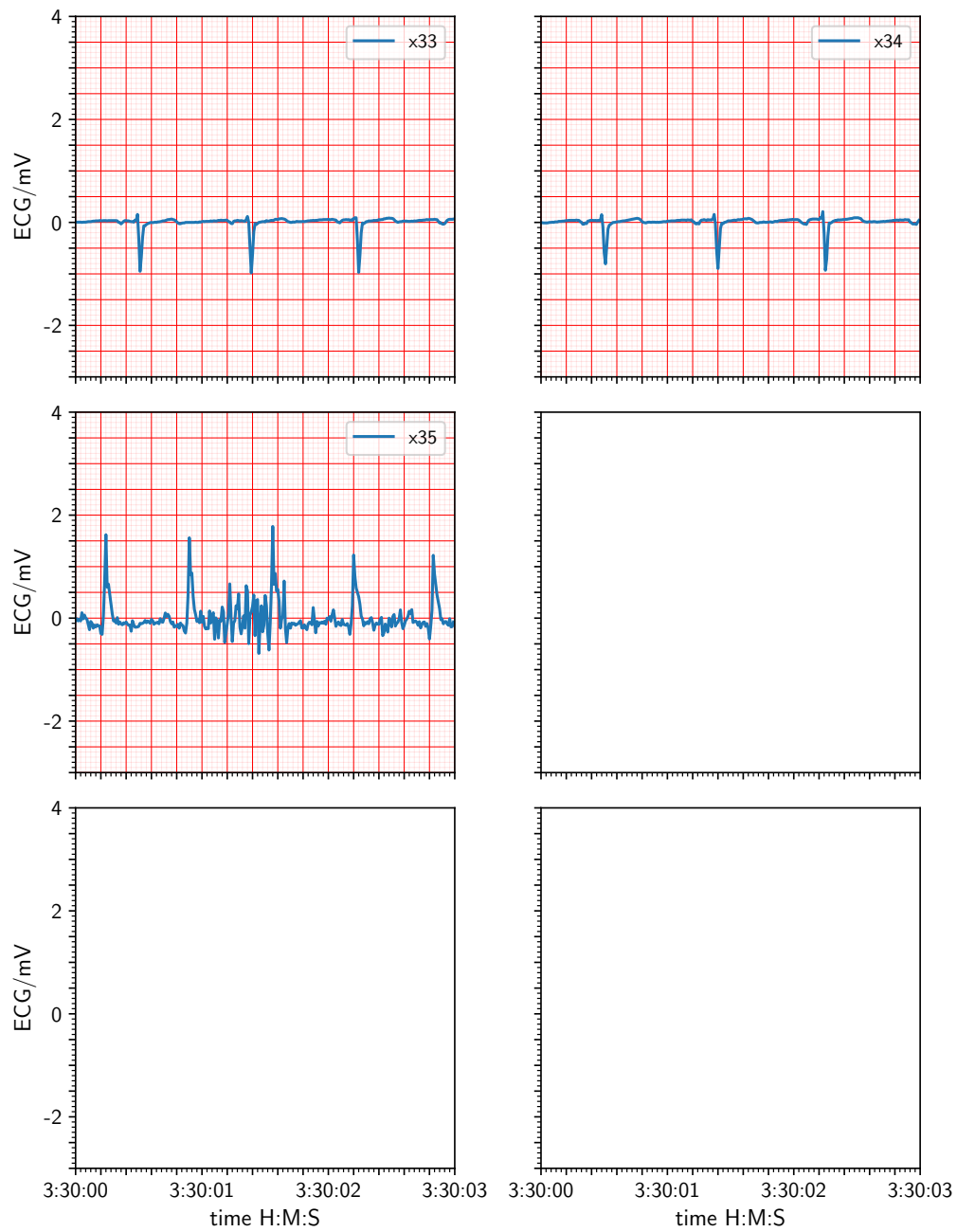


Figure 16: Subsets of data from six CINC-2000 records.